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L3whp Wild Horse
1989 Project, Carbon
County, Montana

FINAL REPORT

**WILD HORSE PROJECT
CARBON COUNTY, MONTANA**

MT A/E 88-46-119

AUGUST 1, 1989

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Wild Horse Project, Carbon County, Montana



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FINAL REPORT

**WILD HORSE PROJECT
CARBON COUNTY, MONTANA**

MT A/E 88-46-119

AUGUST 1, 1989

Prepared for: MR. ED GENSLER
Reclamation Specialist
Abandoned Mine Reclamation Bureau
Montana Department of State Lands
1625 Eleventh Avenue
Helena, Montana 59620

Prepared by: SPECTRUM ENGINEERING
Mining & Civil Engineers
3302 Fourth Avenue North
Billings, Montana 59101

Gary W. Rome, P.E.
Project Engineer

Hank Lowe
Project Inspector

**WILD HORSE PROJECT
FINAL REPORT**

I. INTRODUCTION

A. Project Objectives

The project goal is to reclaim land disturbed by uranium mining. The major items of work include pneumatically backfilling five adits, regrading waste dumps at each of the five adits, backfilling an exploration pit with an adjacent waste dump, disposing of debris, and revegetating the disturbed areas.

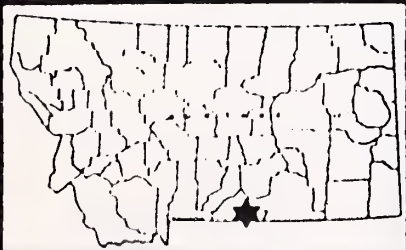
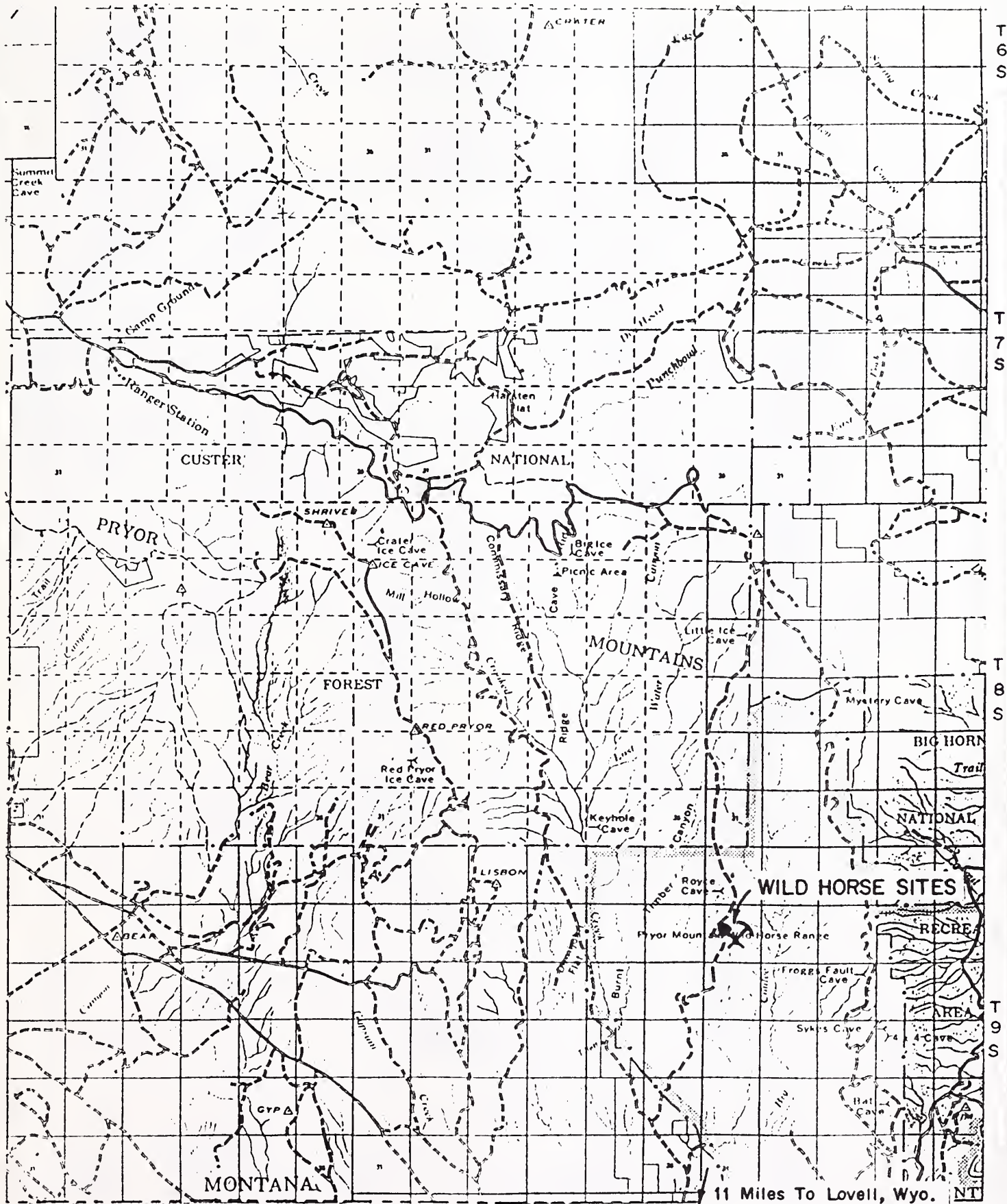
B. Site Description and Location

The Wild Horse Project is located approximately 23 miles north of Lovell, Wyoming in the Pryor Mountain, Wild Horse Range. The Project is divided into 6 sites (adits 1 through 5 and the exploration pit) and all 6 sites are within 1000 feet of each other. The topography is rough and broken with an elevation change of 115 feet. The average elevation is 5825 feet. Vegetation consists of grasses, cactus, some pine trees and cedar bushes. The land use is a Wild Horse Range controlled by the Bureau of Land Management. The site is more particularly located in the northeast 1/4 of the southwest 1/4, Section 7, Township 9 South, Range 28 East, Carbon County, Montana.



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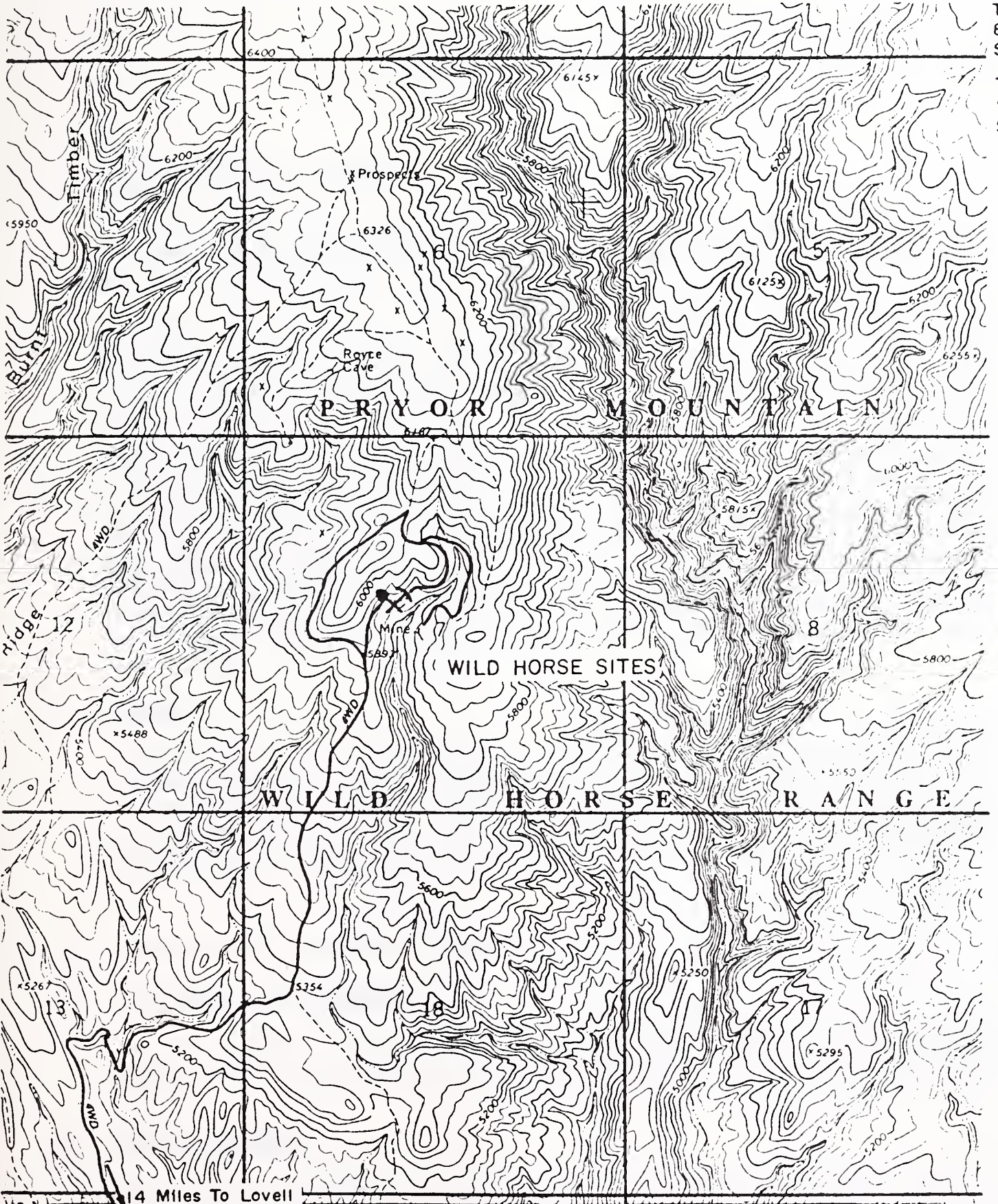


STATE OF MONTANA — DEPARTMENT OF STATE LANDS
 ABANDONED MINE RECLAMATION BUREAU — RECLAMATION DIVISION

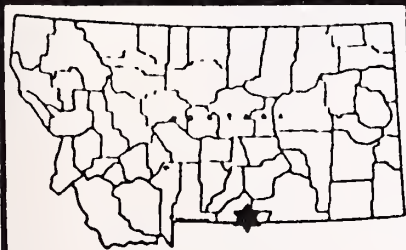
VICINITY MAP

SITE WILD HORSE
 COUNTY, MT. CARBON TOWNSHIP 9S RANGE 28E
 SECTION(S) 7

MAP SCALE: 1" = 2.5 Miles



14 Miles To Lovell
R 27 E R 28 E



STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU — RECLAMATION DIVISION

SITE MAP

SITE WILD HORSE
CARBON COUNTY, MT; TOWNSHIP 9S RANGE 28E
 SECTION(S) 7
 MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET MYSTERY CAVE

WILD HORSE PROJECT FINAL REPORT

C. Land Ownership and Access

The Wild Horse Site and access is owned by the U.S. Government and administered by the Bureau of Land Management, Billing Resource Area, c/o Ken Hanify, 810 East Main, Billings, Montana 59105 at phone 406/657-6262.

The best access to the site is from Lovell, Wyoming located approximately 90 miles south of Billings, Montana along paved U.S. Highway 310. From Lovell you travel approximately 20 miles east along paved U.S. Highway 14A until reaching Wyoming Highway Number 37. Travel north along paved Highway 37 for 8.8 miles until you reach the Gyp Springs Road. Turn left at the point and proceed 1.5 miles west. Turn north (right turn) at this point onto the Crooked Creek Road and follow it for 2.8 miles until you reach the horse corrals at Britton Spring. Continue traveling along the Crooked Creek road for an additional 0.5 miles and then turn north (right) again. Follow this road for about 1.7 miles until you reach the Burnt Timber-Tillet Ridge Road Number 14 (marked by a U.S. Forest Service sign). An old abandoned tractor is located at this turnoff. Turn right (north) onto this road and travel for approximately 5.5 miles to the project site. The road for the last three miles or so is badly rutted and is more a 4-wheel drive trail than a road.

D. History

The Wild Horse sites are a part of a small uranium mining district on the southwest edge of the Pryor Mountains in Carbon County, Montana. The site is five miles north of the Montana/Wyoming border. Certificates of Location are not on file for these particular sites. Bureau of Land Management records show that mining of uranium was started in the area in the 1950's and abandoned in the 1960's.

II. DESCRIPTION OF RECLAMATION PROJECT

A. SITE HAZARDS AND PROBLEMS

The site consists of 5 open adits and related waste dumps, 1 pit excavation and waste pile, 3 drill holes located above adits 1 and 3 and mining related debris.

B. PROJECT PLANNING

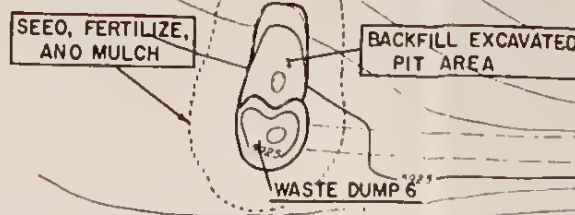
The scope of work for each area was to: 1) eliminate all open adits by pneumatic backfilling from the waste dump areas; 2) rebuild and regrade areas around adits and related waste dumps; 3) seal drill holes; 4) seed, fertilize and mulch all disturbed areas; and 5) dispose of all mine-related debris.



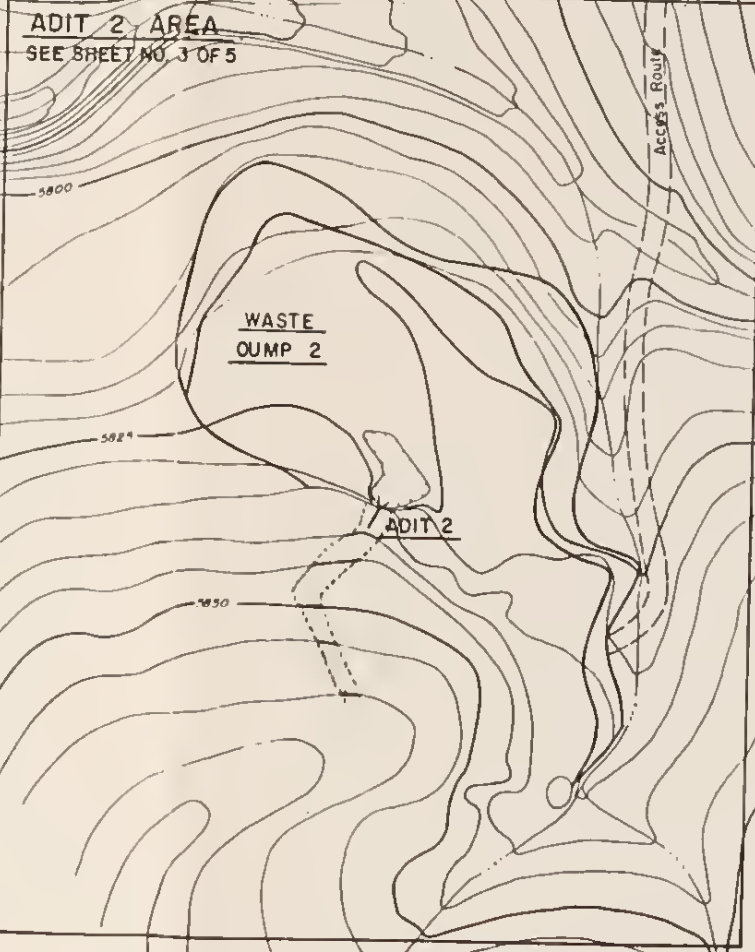
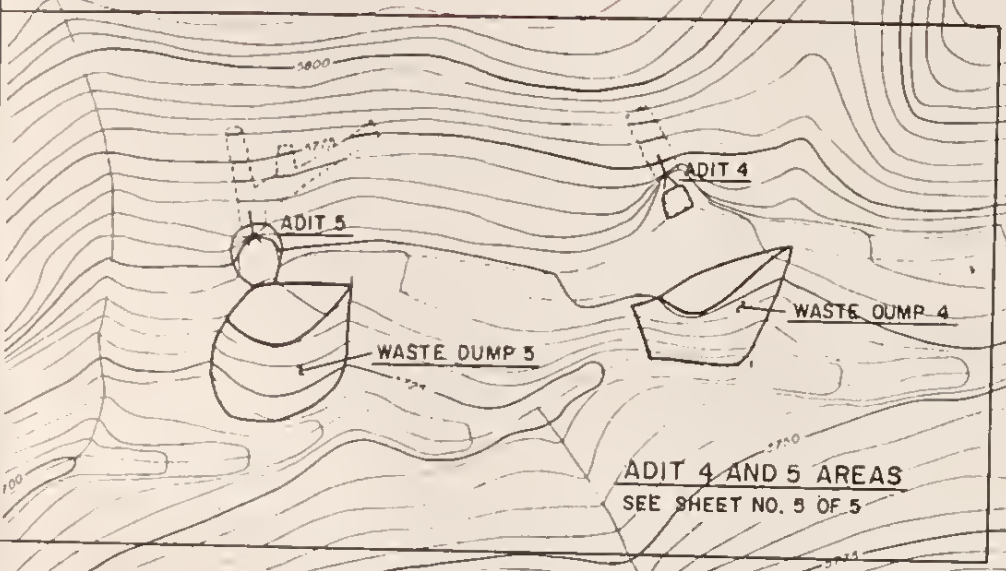
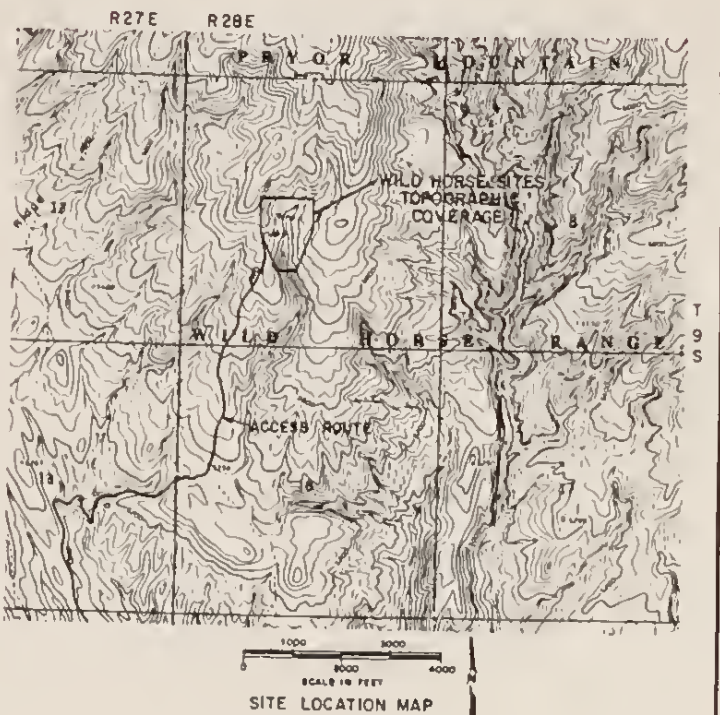
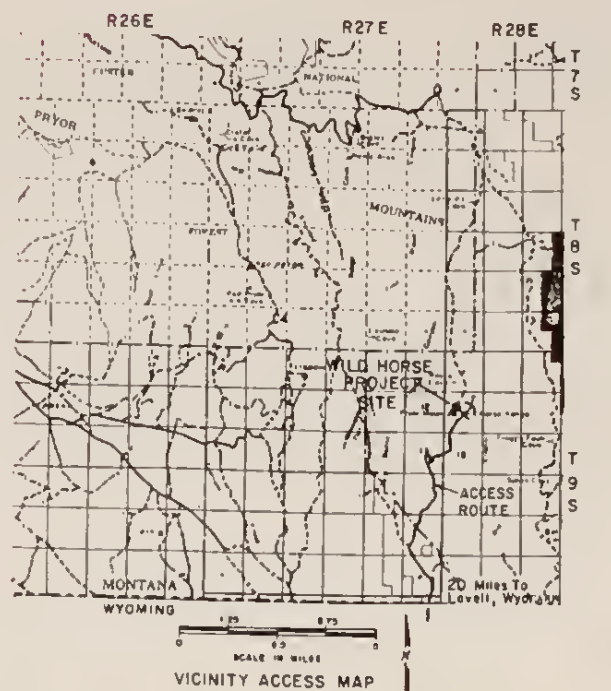
Vertical Datum Based On Interpolation Of USGS 7 1/2' Quadrangle: MYSTERY CAVE
 Topography Prepared From Ground Survey Conducted In 1987 By Spectrum Engineering Using A Plane Table and Alidade. This Topography Is Of Reconnaissance Class And Has Not Been Field Checked

- LEGEND**
- 5750 — CONTOUR
 - WASTE DUMP
 - DRAINAGE
 - EXCAVATED PIT
 - UNDERGROUND MINE WORKINGS
 - OPEN ADIT

ADDITIONAL INFORMATION PERTAINING TO THIS SITE MAY EXIST IN THE DEPARTMENT OF STATE LANDS' FILES OR AT SPECTRUM ENGINEERING'S OFFICE. THIS MATERIAL IS AVAILABLE FOR REVIEW BY ANY INTERESTED PARTY.



VEHICLE TRAVEL WILL BE LIMITED TO ROUTES FLAGGED ON-SITE BY THE PROJECT ENGINEER.



WORK DESCRIPTION

- PERFORM SITE PREPARATION BY DISPOSING OF ALL DEBRIS LITTERING THE SITES
- PROVIDE WATER FOR USE IN COMPACTION AND FOR DUST SUPPRESSION IN THE CONSTRUCTION AREA AND ON THE HAUL ROADS.
- SEAL ORILL HOLES 1, 2, AND 3.
- BACKFILL THE EXCAVATED PIT SOUTH OF THE ADIT AREA 1 WITH MATERIAL FROM THE ADJACENT WASTE DUMP.
- PNEUMATICALLY BACKFILL ADITS 1 THROUGH 5 WITH MATERIAL FROM THEIR ADJACENT WASTE DUMPS.
- REBUILD AND REGRADE THOSE AREAS AROUND ADITS 1 THROUGH 5 AND WASTE DUMPS 1 THROUGH 5.
- SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS INCLUDING THE HAUL ROADS.
- MORE SPECIFIC WORK DESCRIPTION DETAILS AND DRAWINGS CAN BE FOUND ON PAGES 2 THROUGH 5 OF THE SITE PLAN AND GENERAL LAYOUT SHEETS AND IN THE SPECIAL PROVISIONS.

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
DH-1, 2, 3	6-INCH DIAMETER	PLUG	3 EACH
EXPLORATION PIT	EXCAVATED PIT	BACKFILL AND REGRADE	120 LEY
WATER	REGRADED PIT AREA	FOR COMPACTION	1,800 GALLONS
	ALL CONSTRUCTION AREAS AND HAUL ROADS	FOR DUST SUPPRESSION	5,000 GALLONS
REVEGETATION OF DISTURBANCE AREA	SEED APPLICATION (10 LBS PLS/ACRE)	FERTILIZER APPLICATION (80.0 LBS NUTRIENT/ACRE)	MULCH APPLICATION (3000 LBS/ACRE)
D-20 ACRES	2 LBS PLS	16 LBS	600 LBS

NOTE: THESE AREAS WILL BE HYDROSEEDED AND HYDROMULCHED. TACKIFIER IN HYDRO-MULCHING WILL BE APPLIED AT A RATE OF 80 POUNDS PER ACRE.

ADIT 1 THROUGH 5 AREA OPENINGS AND WASTE PILES - SEE PAGES 2 THROUGH 5

LANDOWNER AND CONTACT

SECTION 7, T9S, R28E
 LLOYD FUSSELLMAN
 BUREAU OF LAND MANAGEMENT
 BILLINGS RESOURCE AREA
 810 E. MAIN
 BILLINGS, MT. 59105
 PHONE (406) 657-8282

NOTICE

AN ABANDONED MINE UNDERLIES THIS SITE. MANY POTENTIAL HAZARDS EXIST. THE EXTENT OF THESE HAZARDS IS NOT FULLY KNOWN. CONTRACTORS AND OTHER PERSONS WORKING AT THE SITE SHALL APPRISE THEMSELVES OF THE CONDITIONS AND TAKE WHATEVER STEPS ARE DEEMED NECESSARY TO INSURE SAFETY WHILE PERFORMING THEIR DUTIES.

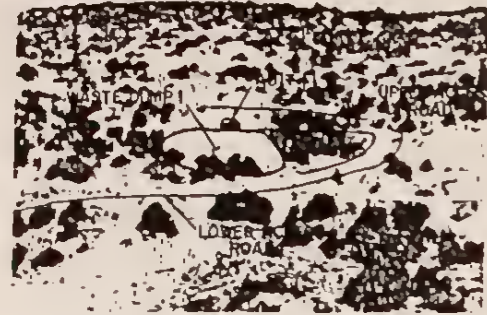
SITE PLAN AND GENERAL LAYOUT

WILD HORSE SITES
 SECTION 7, T9S, R28E
 CARBON COUNTY, MONTANA

STATE OF MONTANA
 DEPARTMENT OF STATE LANDS
 ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATE:	12-28-87
DRAWN BY:	DLO
CHECKED BY:	
APPROVED BY:	
NO.:	1
DATE:	7/30 VKH

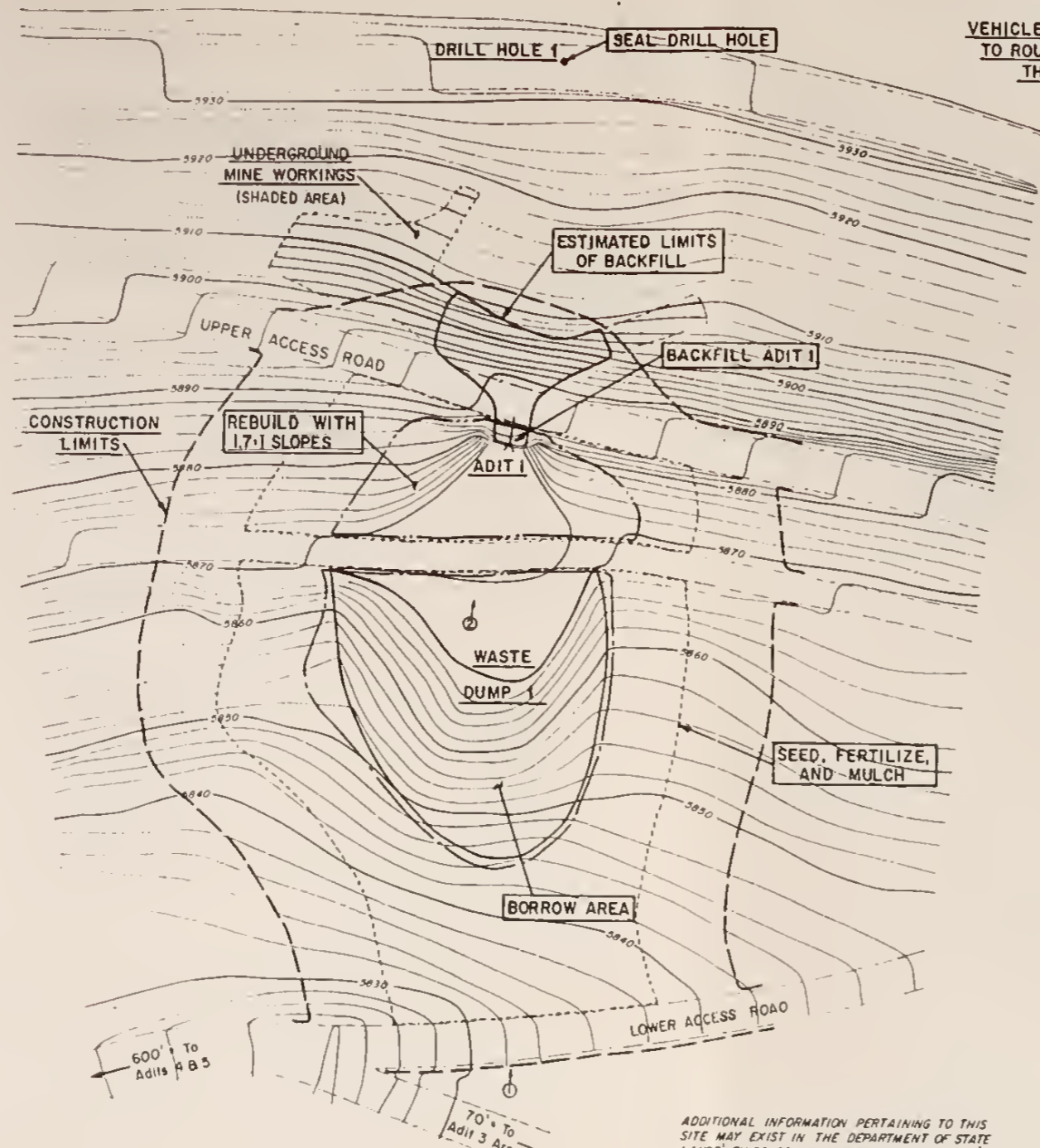
SPECTRUM ENGINEERING
 Mining and Civil Engineers
 3302 4th AVE NORTH
 BILLINGS, MONTANA



① PICTURE 1 SHOWS ADIT 1, WASTE DUMP 1, AND THE ACCESS ROADS.



② PICTURE 2 SHOWS THE ADIT 1 OPENING



VEHICLE TRAVEL WILL BE LIMITED TO ROUTES FLAGGED ON-SITE BY THE PROJECT ENGINEER.



Vertical Datum Based On Interpolation Of USGS 7 1/2' Quadrangle: MYSTERY CAVE Topography Prepared From Ground Survey Conducted In 1987 By Spectrum Engineering Using A Plane Table And Alidade This Topography Is Of Reconnaissance Class And Has Not Been Field Checked

- LEGEND**
- 5870— CONTOUR
 - WASTE DUMP
 - DRAINAGE
 - ⊙ PICTURE NUMBER AND ORIENTATION
 - UNDERGROUND MINE WORKINGS
 - OPEN ADIT

ADDITIONAL INFORMATION PERTAINING TO THIS SITE MAY EXIST IN THE DEPARTMENT OF STATE LANDS' FILES OR AT SPECTRUM ENGINEERING'S OFFICE. THIS MATERIAL IS AVAILABLE FOR REVIEW BY ANY INTERESTED PARTY

WORK DESCRIPTION

- PERFORM SITE PREPARATION BY DISPOSING OF ALL DEBRIS LITTERING THE SITE
- PROVIDE WATER FOR USE IN COMPACTION AND FOR DUST SUPPRESSION IN THE CONSTRUCTION AREA AND ON THE HAUL ROADS
- SEAL DRILL HOLE 1 (SEE SHEET 2 OF 5).
- BACKFILL ADIT 1 WITH MATERIAL FROM WASTE DUMP 1
- REBUILD THE SLOPE ADJACENT TO ADIT 1 WITH MATERIAL FROM WASTE DUMP 1
- SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS INCLUDING THE HAUL ROADS
- ADDITIONAL WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
ADIT 1 AREA	ADIT OPENING	PNEUMATIC BACKFILL	290 LCY
	WASTE PILE AREA	REGRADE	190 LCY
WATER	REGRADE AREA	FOR COMPACTION	3,000 GALLONS
REVEGETATION OF DISTURBANCE AREA	SEED APPLICATION (10 LBS PLS/ACRE)	FERTILIZER APPLICATION (80.0 LBS NUTRIENT/ACRE)	MULCH APPLICATION (3000 LBS/ACRE)
0.30 ACRES	3 LBS PLS	24 LBS	900 LBS

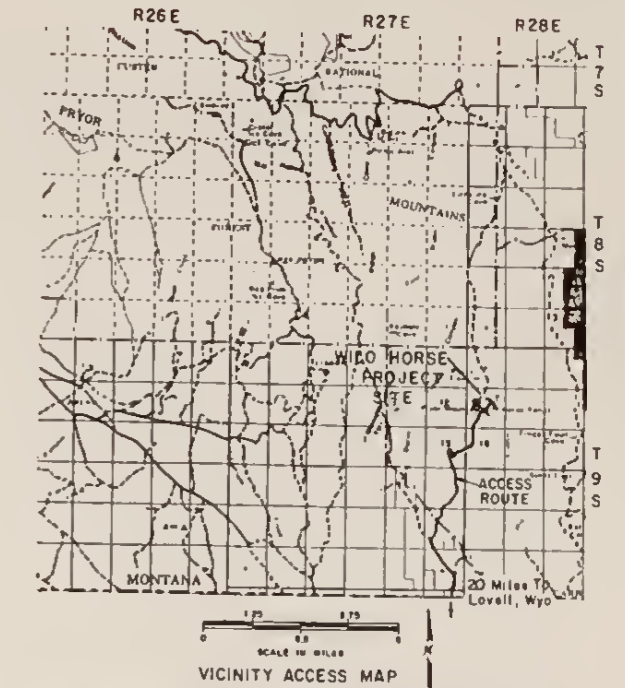
NOTE: THESE AREAS WILL BE HYDROSEEDING AND HYDROMULCHED. TACKIFIER IN HYDRO-MULCHING WILL BE APPLIED AT A RATE OF 80 POUNDS PER ACRE.

LANDOWNER AND CONTACT

SECTION 7, T9S, R28E
 LLOYD FUSSELMAN
 BUREAU OF LAND MANAGEMENT
 BILLINGS RESOURCE AREA
 BIO E. MAIN
 BILLINGS, MT, 59105
 PHONE (406) 657-6262

NOTICE

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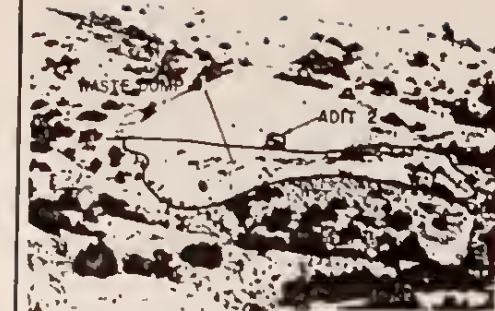
SITE PLAN AND GENERAL LAYOUT

WILD HORSE SITES - ADIT 1 AREA
 SECTION 7, T9S, R28E
 CARBON COUNTY, MONTANA

STATE OF MONTANA
 DEPARTMENT OF STATE LANDS
 ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

DATA: 12-28-87 DRAWN BY: DLO CHECKED BY: APPROVED BY: NO. 1 DATE: 7/88 BY: VKH	SPECTRUM ENGINEERING Mining and Civil Engineers 3302 4th AVE NORTH BILLINGS, MONTANA
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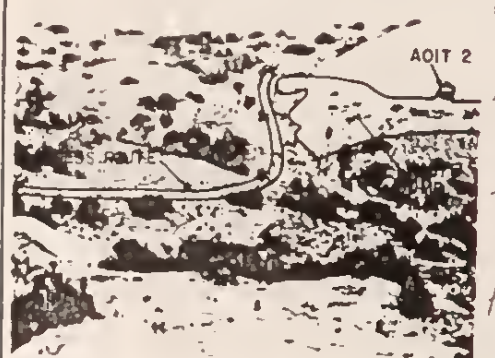
SHEET NO 2 of 5



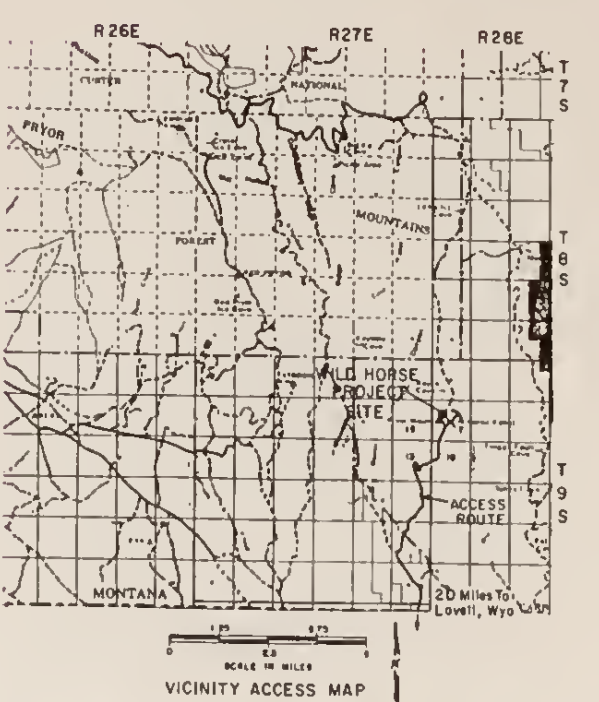
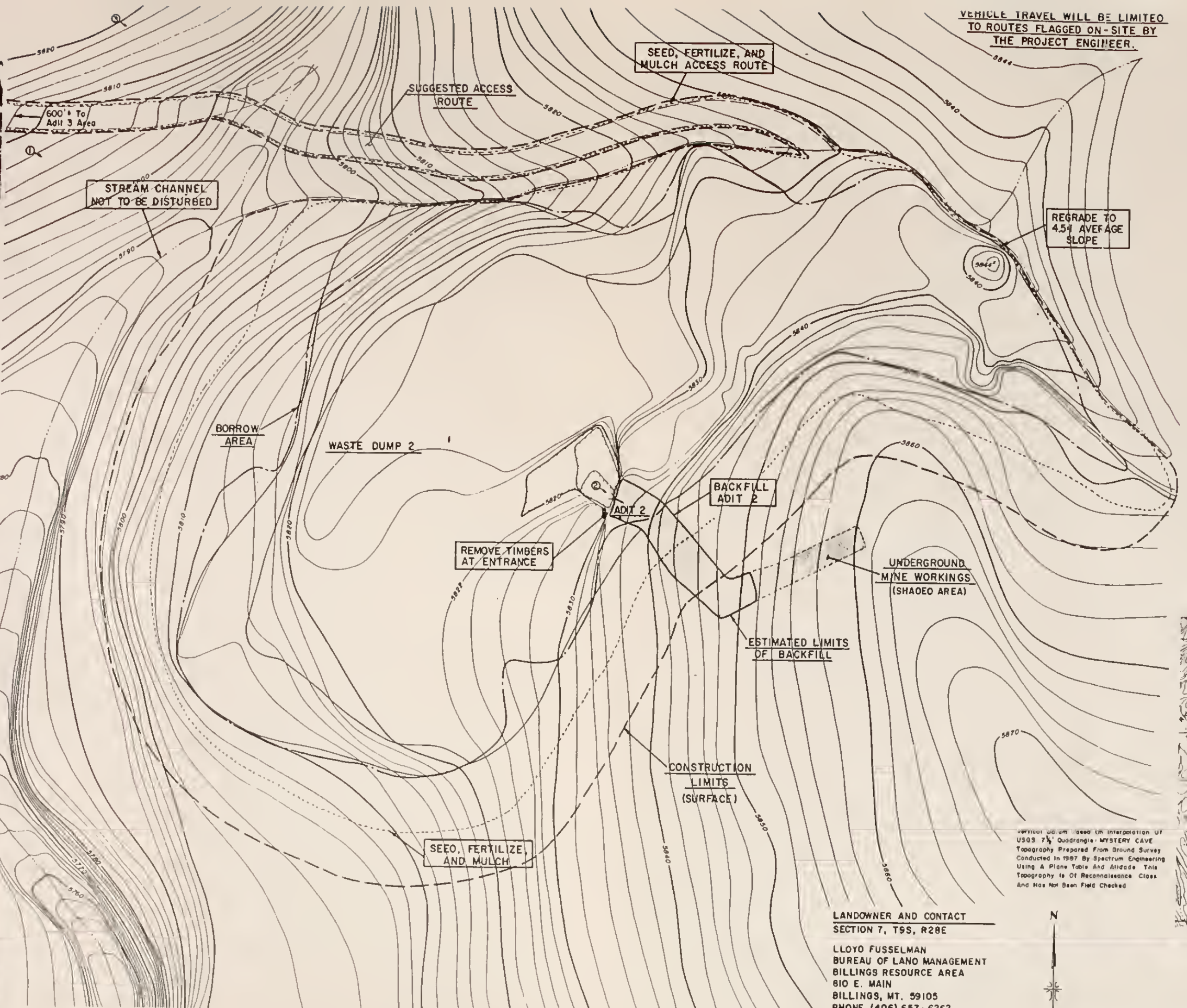
① PICTURE 1 SHOWS ADIT 2 AND WASTE DUMP 2



② PICTURE 2 SHOWS THE ADIT 2 OPENING



③ PICTURE 3 SHOWS ADIT 2, WASTE DUMP 2, AND SUGGESTED ACCESS



LANDOWNER AND CONTACT
SECTION 7, T9S, R28E
LLOYD FUSSELMAN
BUREAU OF LAND MANAGEMENT
BILLINGS RESOURCE AREA
810 E. MAIN
BILLINGS, MT. 59105
PHONE (406) 657-6262

Vertical datum used in interpretation of USGS 7 1/2' Quadrangle - MYSTERY CAVE Topography Prepared From Ground Survey Conducted in 1987 By Spectrum Engineering Using A Plane Table And Alidade This Topography is of Reconnaissance Class and Has Not Been Field Checked



WORK DESCRIPTION

- REVEGETATION BY DISPOSING OF ALL DEBRIS LITTERING THE SITE
- REGRADE AND COMPACT WASTE PILE AREA AND FOR DUST SUPPRESSION IN THE DISTURBED AREA AND ON THE HAUL ROADS.
- REGRADE AND COMPACT WASTE PILE AREA WITH MATERIAL FROM WASTE DUMP 2
- REGRADE AND COMPACT WASTE PILE AREA ADJACENT TO ADIT 2.
- REVEGETATION OF ALL DISTURBED AREAS INCLUDING THE HAUL ROADS.
- REVEGETATION OF ALL DISTURBED AREAS INCLUDING THE HAUL ROADS.

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY	
ADIT 2 AREA	ADIT OPENING	PNEUMATIC BACKFILL	450 LCY	
	WASTE PILE AREA	REGRADE	1640 LCY	
WATER	REGRADE AREA	FOR COMPACTION	24,600 GALLONS	
DEBRIS	BIODEGRADABLE	DISPOSE OF	1/2 PICKUP LOAD	
REVEGETATION OF DISTURBANCE AREA	SEED APPLICATION (10 LBS PLS/ACRE)	FERTILIZER APPLICATION (80.0 LBS NUTRIENT/ACRE)	MULCH APPLICATION (3000 LBS/ACRE)	
	1.40 ACRES	14 LBS PLS	112 LBS	4,200 LBS

NOTE: THESE AREAS WILL BE HYDROSEEDED AND HYDROMULCHED. TACKIFIER IN HYDROMULCHING WILL BE APPLIED AT A RATE OF 80 POUNDS PER ACRE.

LEGEND

- 5840 — CONTOUR
- WASTE DUMP
- DRAINAGE
- ① PICTURE NUMBER AND ORIENTATION
- UNDERGROUND MINE WORKINGS
- OPEN ADIT

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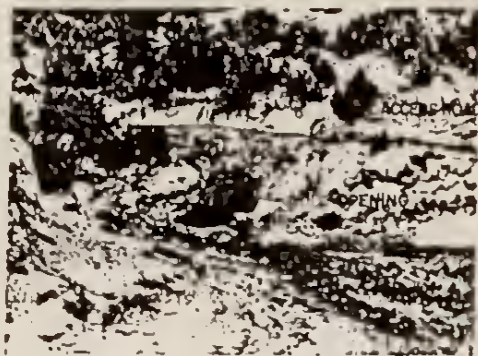
SITE PLAN AND GENERAL LAYOUT
WILD HORSE SITES - ADIT 2 AREA
SECTION 7, T9S, R28E
CARBON COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

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APPROVED BY:

SPECTRUM ENGINEERING
Mining and Civil Engineers
3302 41st AVE NORTH
BILLINGS, MONTANA

SHEET NO. 3 of 5



① PICTURE 1 SHOWS THE ADIT 3 OPENING, THE ACCESS ROAD, AND A PORTION OF THE AREA TO BE REGRADED



② PICTURE 2 SHOWS WASTE DUMP 3 AND DEBRIS ADJACENT TO WASTE DUMP 3

WORK DESCRIPTION

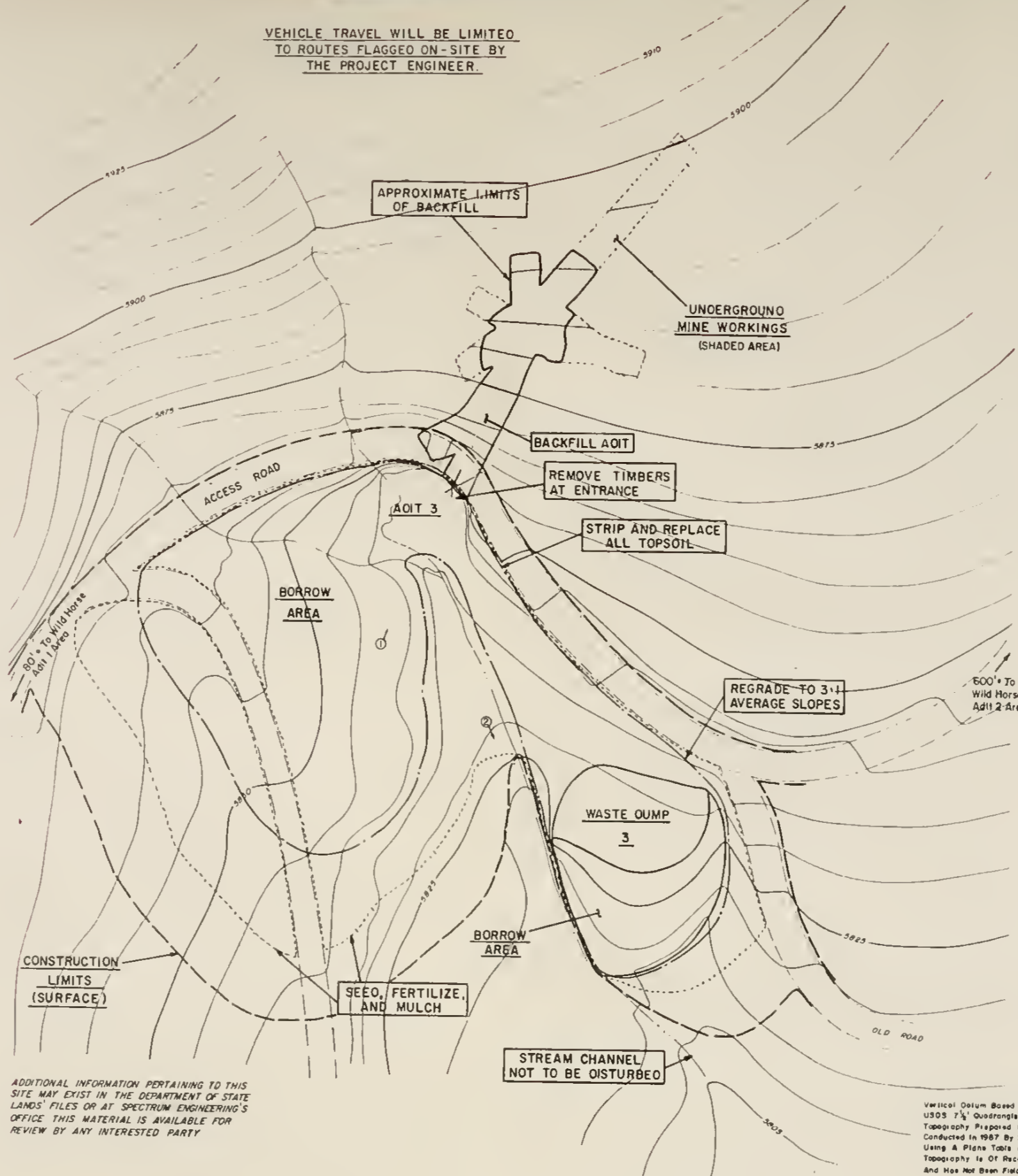
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- PROVIDE WATER FOR USE IN COMPACTION AND FOR DUST SUPPRESSION IN THE CONSTRUCTION AREA AND ON THE HAUL ROADS
- PNEUMATICALLY BACKFILL ADIT 3 WITH MATERIAL FROM WASTE DUMP 3 AND THE REGRADE AREA
- REGRADE THE AREA INDICATED TO CONFORM WITH THE POST RECLAMATION CONTOURS
- SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS INCLUDING THE HAUL ROADS
- ADDITIONAL WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS.

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
ADIT 3 AREA	ADIT OPENING	PNEUMATIC BACKFILL	525 LCY
	WASTE PILE AREA	REGRADE	390 LCY
WATER	REGRADE AREA	FOR COMPACTION	5,900 GALLONS
DEBRIS	BIDDEGRADABLE	DISPOSE	1/2 PICKUP LOAD
REVEGETATION OF DISTURBANCE AREA	SEED APPLICATION	FERTILIZER APPLICATION	MULCH APPLICATION
	(10 LBS PLS/ACRE)	(80 0 LBS NUTRENT/ACRE)	(3000 LBS/ACRE)
	0.50 ACRES	5 LBS PLS	40 LBS

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Vertical Datum Based On Interpolation Of USGS 7 1/2' Quadrangle - MYSTERY CAVE Topography Prepared From Ground Survey Conducted in 1987 By Spectrum Engineering Using A Plane Table And Altimeter. This Topography Is Of Reconnaissance Class And Has Not Been Field Checked



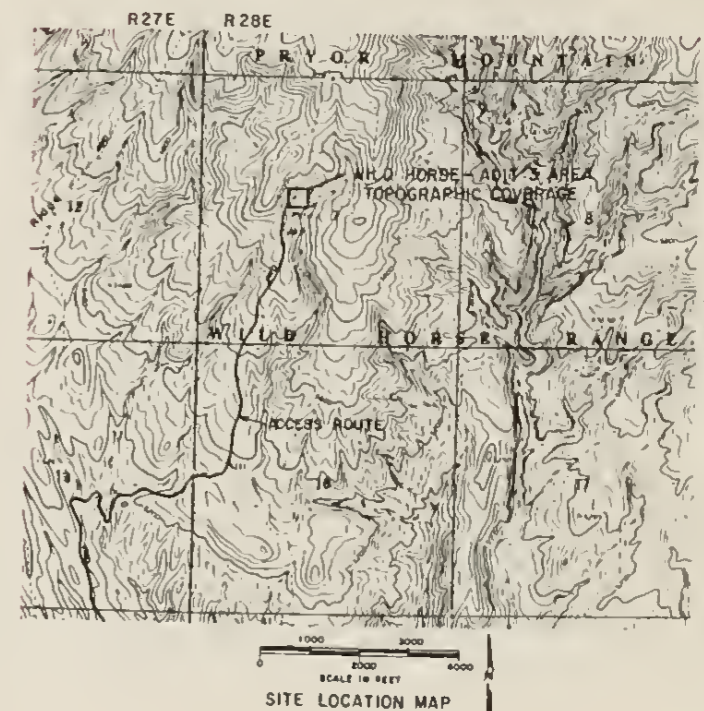
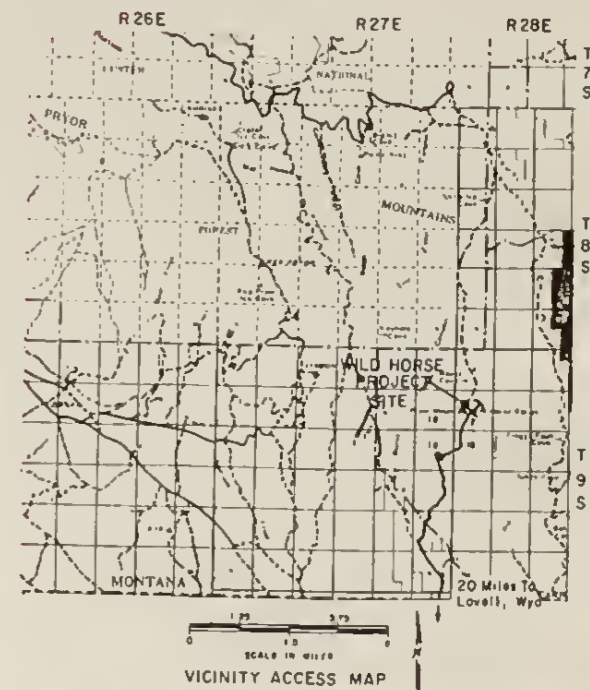
- LEGEND**
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 - ① PICTURE NUMBER AND ORIENTATION
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LANDOWNER AND CONTACT
SECTION 7, T9S, R28E

LLOYD FUSSELMAN
BUREAU OF LAND MANAGEMENT
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BIO E, MAIN
BILLINGS, MT. 59105
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SITE PLAN AND GENERAL LAYOUT

WILD HORSE SITES - ADIT 3 AREA
SECTION 7, T9S, R28E
CARBON COUNTY, MONTANA

STATE OF MONTANA
DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

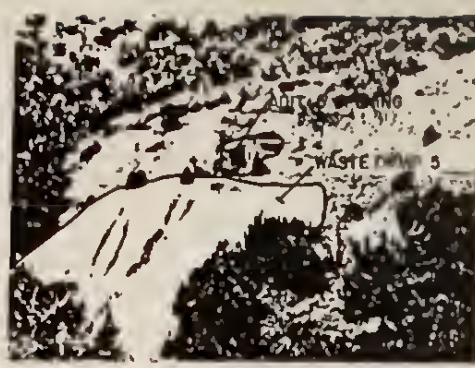
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APPROVED BY:
REVISED DATE: 1/7/88
BY: VKH

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Mining and Civil Engineers
5302 4th AVE NORTH
BILLINGS, MONTANA

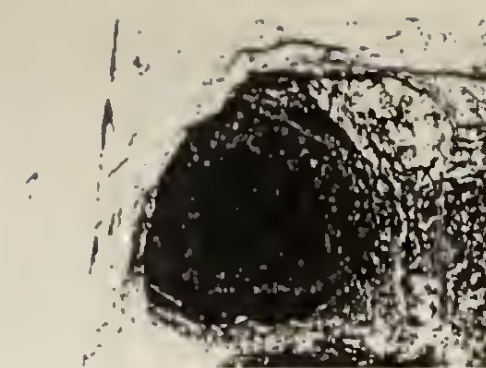
SHEET NO 4 of 5



① PICTURE 1 SHOWS ADIT 4.



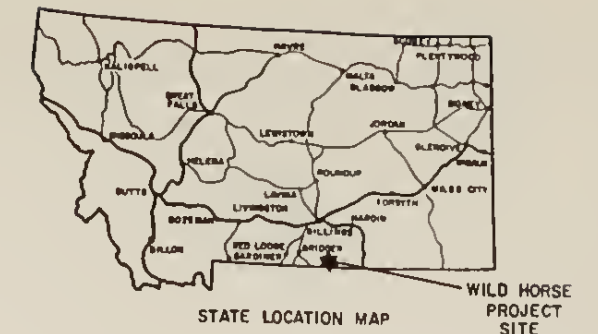
② PICTURE 2 SHOWS ADIT 5 AND WASTE DUMP 5.



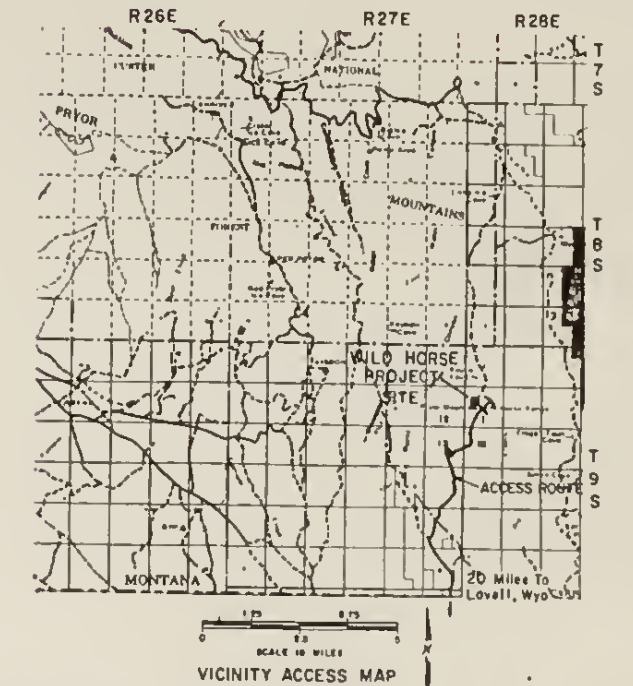
③ PICTURE 3 SHOWS THE INTERIOR OF ADIT 5.

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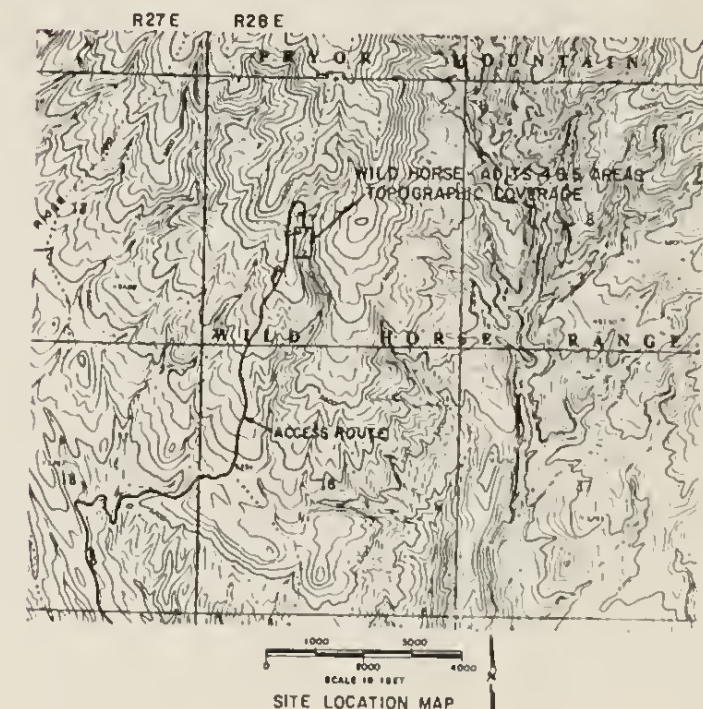
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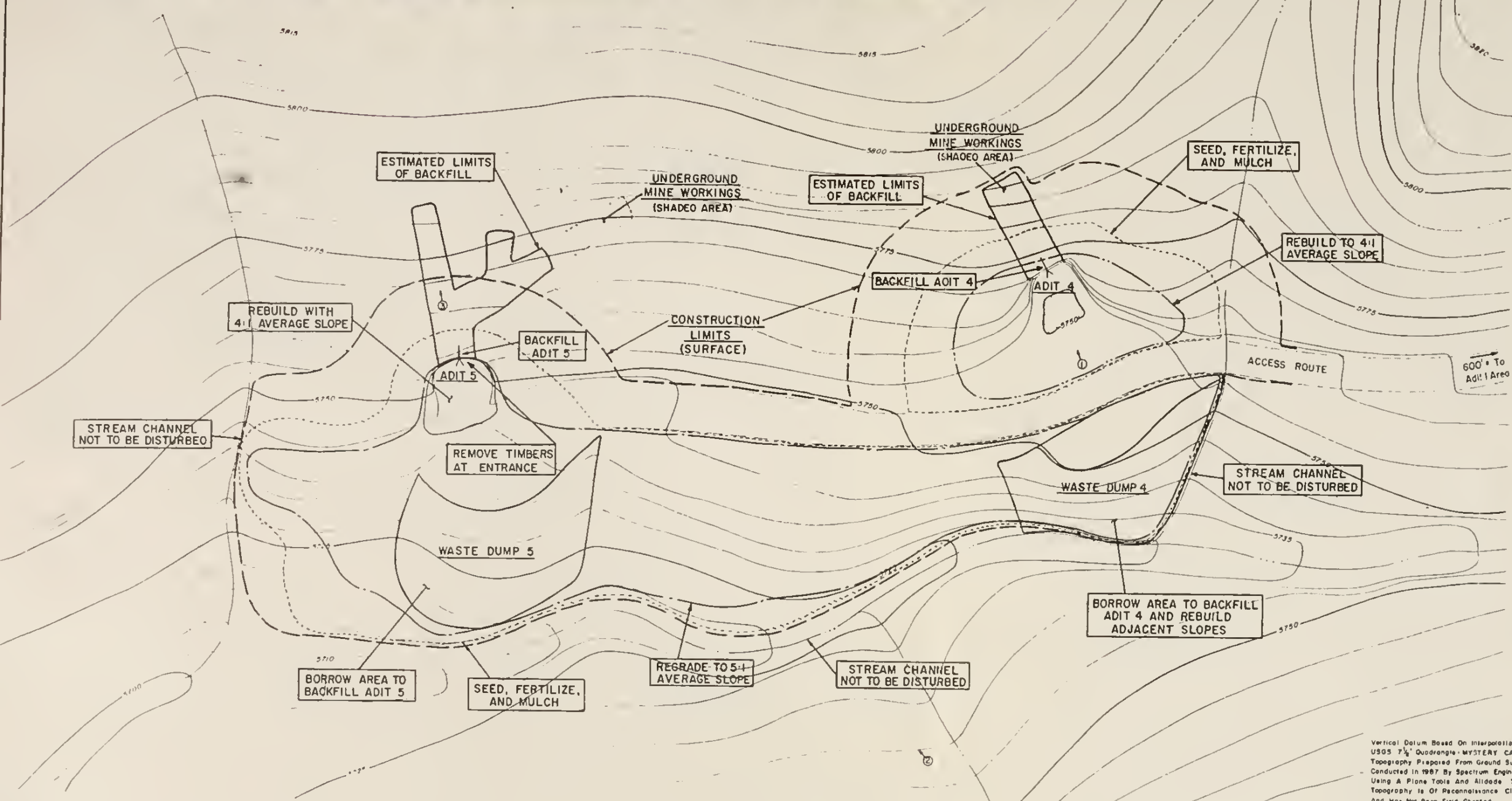
STATE LOCATION MAP WILD HORSE PROJECT SITE



VICINITY ACCESS MAP



SITE LOCATION MAP



Vertical Datum Based On Interpretation Of USGS 7 1/2' Quadrangle - MYSTERY CAVE Topography Prepared From Ground Survey Conducted In 1987 By Spectrum Engineering Using A Plane Table And Alidade This Topography Is Of Reconnaissance Class And Has Not Been Field Checked

WORK DESCRIPTION

- PERFORM SITE PREPARATION BY DISPOSING OF ALL DEBRIS LITTERING THE SITE
- PROVIDE WATER FOR USE IN COMPACTION AND FOR DUST SUPPRESSION IN THE CONSTRUCTION AREA AND ON THE HAUL ROADS.
- PNEUMATICALLY BACKFILL ADIT 4 WITH MATERIAL FROM WASTE DUMP 4
- PNEUMATICALLY BACKFILL ADIT 5 WITH MATERIAL FROM WASTE DUMP 5
- REBUILD SLOPE ADJACENT TO ADIT 4 WITH MATERIAL FROM WASTE DUMP 4
- REBUILD SLOPE ADJACENT TO ADIT 5 WITH MATERIAL FROM WASTE DUMP 5
- REGRADE SLOPE ADJACENT TO AND BETWEEN WASTE DUMPS 4 AND 5
- SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS
- ADDITIONAL WORK DESCRIPTION DETAILS CAN BE FOUND IN THE SPECIAL PROVISIONS

WORK SUMMARY TABLE

ITEM	DESCRIPTION	ACTION	QUANTITY
ADIT 4 & 5 AREA	ADIT 4 OPENING	PNEUMATIC BACKFILL	190 LCY
	ADIT 5 OPENING	PNEUMATIC BACKFILL	490 LCY
	WASTE PILE AREA	REGRADE	540 LCY
WATER	REGRADE AREA	FOR COMPACTION	8,100 GALLONS
DEBRIS	BIODEGRADABLE	DISPOSE OF	1 PICKUP LOAD
REVEGETATION OF DISTURBANCE AREA	SEED APPLICATION (10 LBS PLS/ACRE)	FERTILIZER APPLICATION (80.0 LBS NUTRIENT/ACRE)	MULCH APPLICATION (3000 LBS/ACRE)
	0.65 ACRES	7 LBS PLS	52 LBS
			1,950 LBS

NOTE: THESE AREAS WILL BE HYDROSEEDING AND HYDROMULCHED. TACKIFIER IN HYDROMULCHING WILL BE APPLIED AT A RATE OF 80 POUNDS PER ACRE.



- LEGEND
- 5750 — CONTOUR
 - WASTE DUMP
 - - - DRAINAGE
 - ① PICTURE NUMBER AND ORIENTATION
 - - - UNDERGROUND MINE WORKINGS
 - OPEN ADIT

LANDOWNER AND CONTACT

SECTION 7, T9S, R28E
 LLOYD FUSSELMAN
 BUREAU OF LAND MANAGEMENT
 BILLINGS RESOURCE AREA
 810 E. MAIN
 BILLINGS, MT. 59105
 PHONE (406) 637-6262

NOTICE

AN ABANDONED MINE UNDERLIES THIS SITE. MANY POTENTIAL HAZARDS EXIST. THE EXTENT OF THESE HAZARDS IS NOT FULLY KNOWN. CONTRACTORS AND OTHER PERSONS WORKING AT THE SITE SHALL APPRISE THEMSELVES OF THE CONDITIONS AND TAKE WHATEVER STEPS ARE DEEMED NECESSARY TO INSURE SAFETY WHILE PERFORMING THEIR DUTIES.

SITE PLAN AND GENERAL LAYOUT

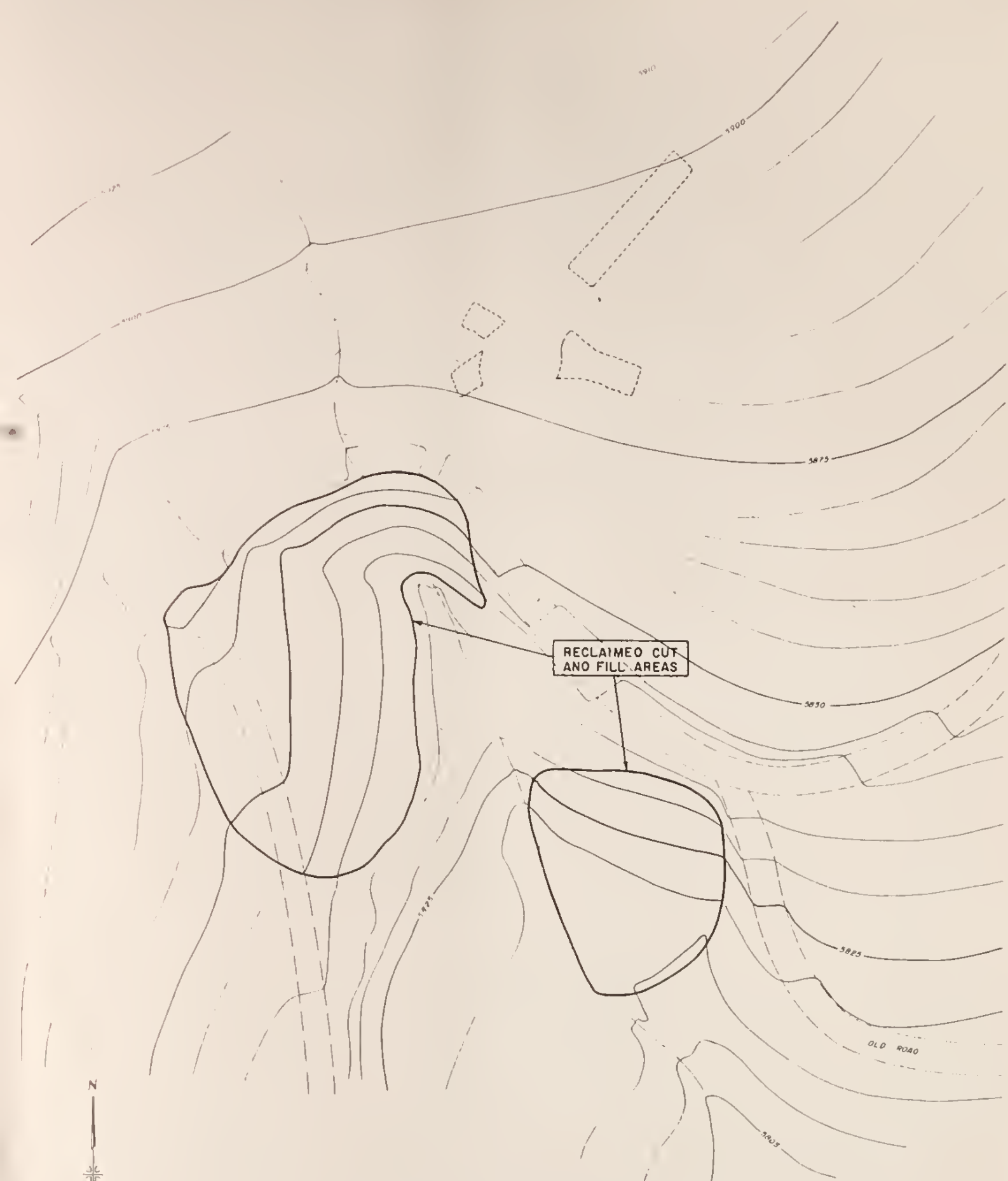
WILD HORSE SITES - ADIT 4 & 5 AREAS
 SECTION 7, T9S, R28E
 CARBON COUNTY, MONTANA

STATE OF MONTANA
 DEPARTMENT OF STATE LANDS
 ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION

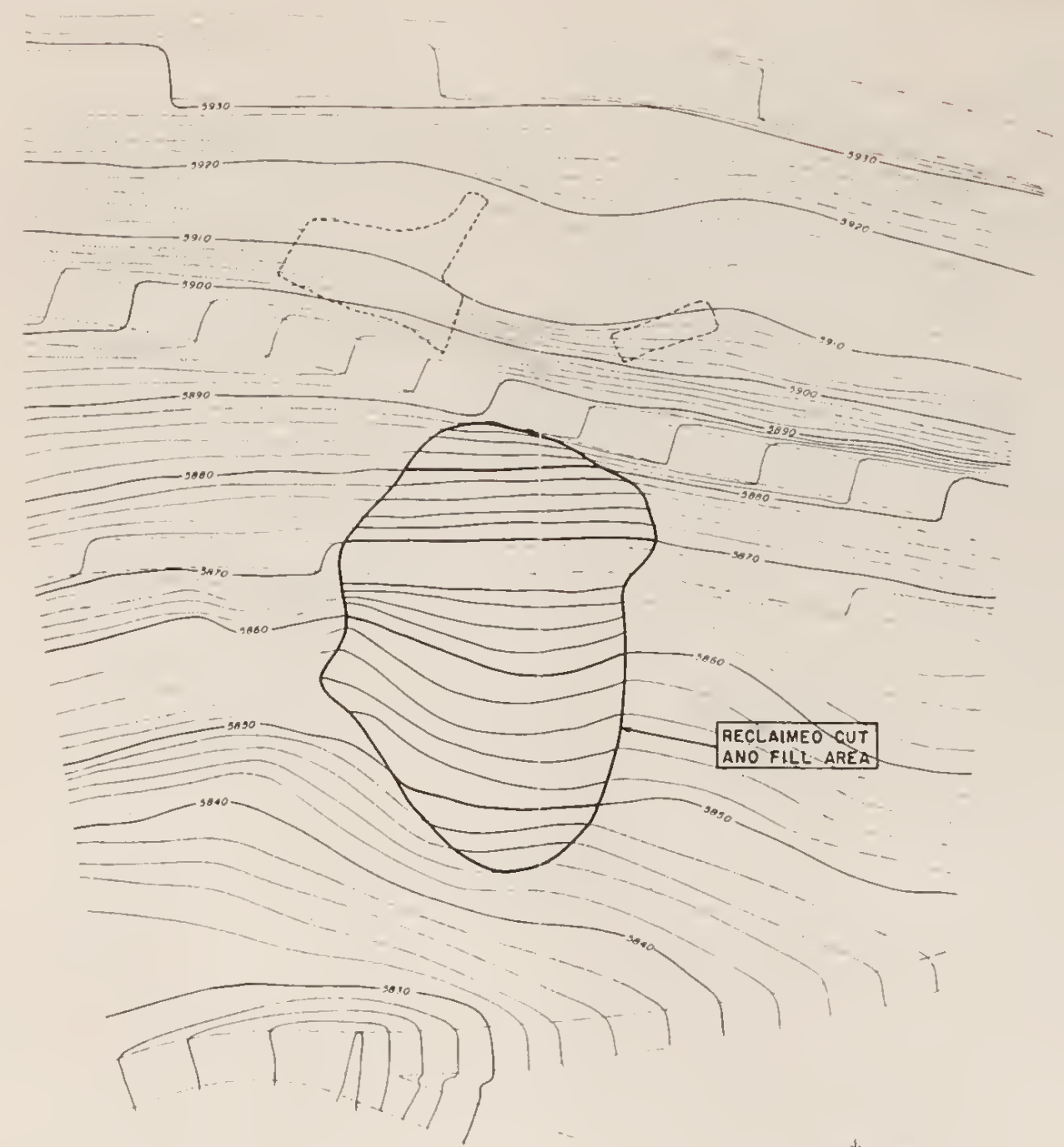
DATE: 12-28-87
 DRAWN BY: OLD
 CHECKED BY:
 APPROVED BY:
 1 7/88 VKH

SPECTRUM ENGINEERING
 Mining and Civil Engineers
 3302 4th AVE NORTH
 BILLINGS, MONTANA

SHEET NO. 5 of 5



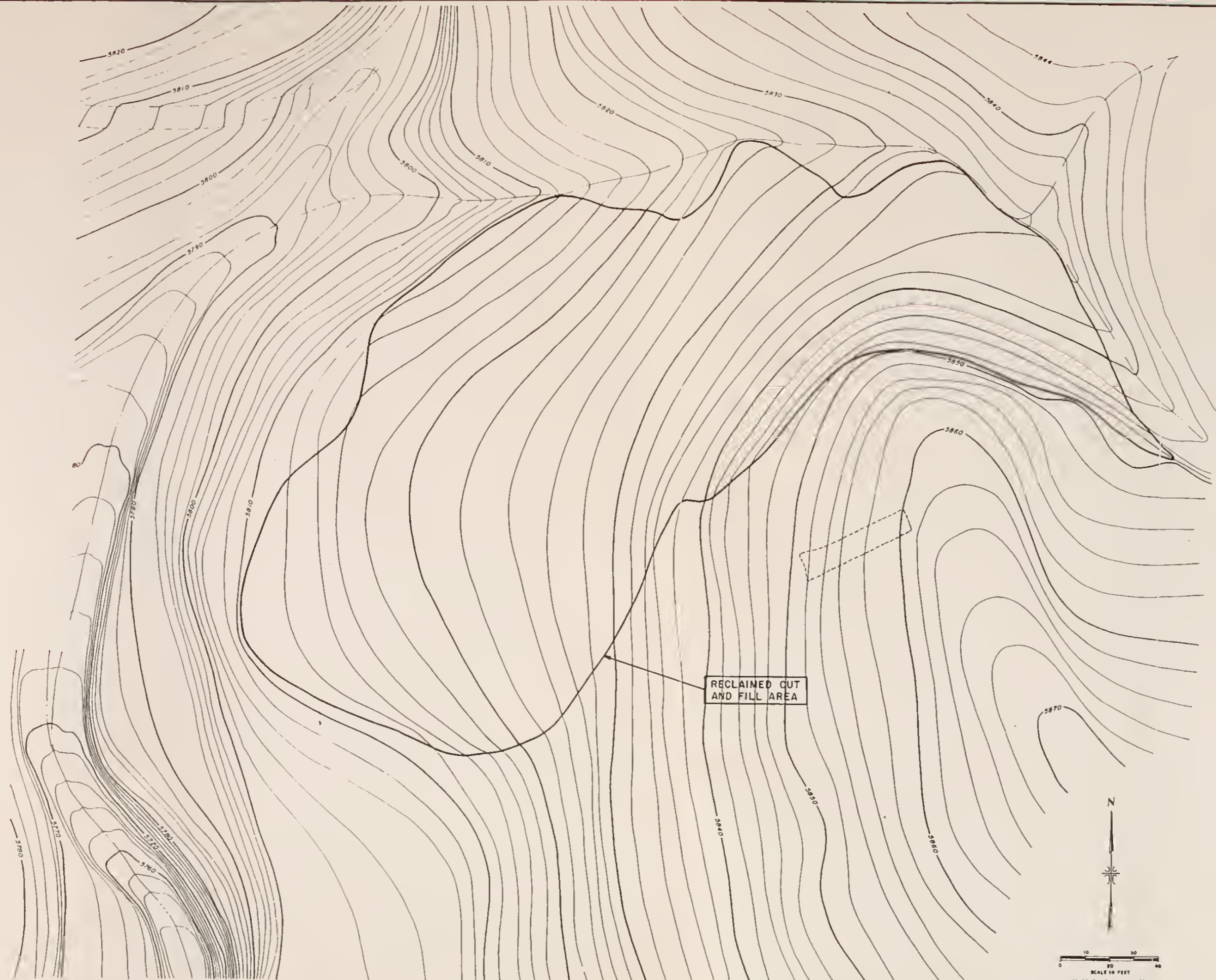
ADIT 3 AREA
ESTIMATED POST RECLAMATION TOPOGRAPHY



ADIT 1 AREA
ESTIMATED POST RECLAMATION TOPOGRAPHY

NOTE: THIS TOPOGRAPHY IS AN ESTIMATE OF POST RECLAMATION TOPOGRAPHY. ACTUAL POST RECLAMATION TOPOGRAPHY MAY VARY SLIGHTLY.

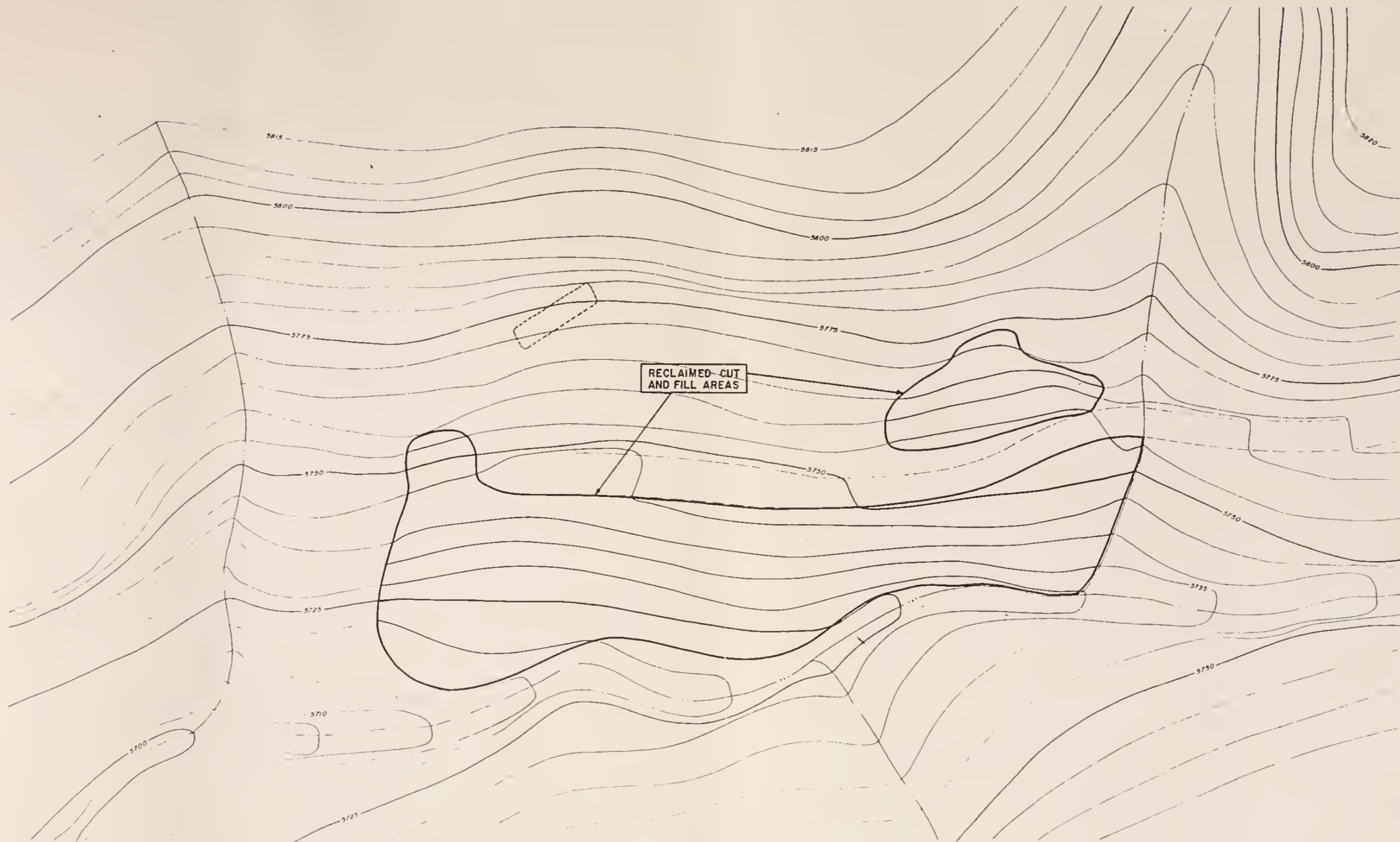
SITE PLAN AND GENERAL LAYOUT	
WILD HORSE SITES - ADIT 1 & 3 AREAS SECTION 7, T9S, R28E CARBON COUNTY, MONTANA	
STATE OF MONTANA DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION	
DATE:	SPECTRUM ENGINEERING Mining and Civil Engineers 3302 4th AVE NORTH BILLINGS, MONTANA
DRAWN BY: DLO	
CHECKED BY:	
APPROVED BY:	
NO. DATE BY	



ADIT 2 AREA
ESTIMATED POST RECLAMATION TOPOGRAPHY

NOTE: THIS TOPOGRAPHY IS AN ESTIMATE OF POST RECLAMATION TOPOGRAPHY. ACTUAL POST RECLAMATION TOPOGRAPHY MAY VARY SLIGHTLY.

SITE PLAN AND GENERAL LAYOUT	
WILD HORSE SITES - ADIT 2 AREA SECTION 7, T9S, R28E CARBON COUNTY, MONTANA	
STATE OF MONTANA DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION	
DATE:	
DRAWN BY:	DLO
CHECKED BY:	
APPROVED BY:	
NO.	DATE
SPECTRUM ENGINEERING Mining and Civil Engineers 3302 4th AVE NORTH BILLINGS, MONTANA	



RECLAIMED CUT AND FILL AREAS

ADIT 4 & 5 AREA
ESTIMATED POST RECLAMATION TOPOGRAPHY



NOTE: THIS TOPOGRAPHY IS AN ESTIMATE OF POST RECLAMATION TOPOGRAPHY. ACTUAL POST RECLAMATION TOPOGRAPHY MAY VARY SLIGHTLY

SITE PLAN AND GENERAL LAYOUT		
WILD HORSE SITES-ADIT 4&5 AREAS SECTION 7, T9S, R28E CARBON COUNTY, MONTANA		
STATE OF MONTANA DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION		
DATE:	SPECTRUM ENGINEERING Mining and Civil Engineers 3302 4th AVE NORTH BILLINGS, MONTANA	
DRAWN BY: DLO		
CHECKED BY:		
APPROVED BY:		
NO.	DATE	BY

**WILD HORSE PROJECT
FINAL REPORT**

C. Chronological History

1. The projects were advertized for the three consecutive weeks of September 15th, 22nd and 29th, 1988 in the Billings Gazette in Billings, Independent Record in Helena, and the Carbon County News in Red Lodge.
2. The pre-bid conference was held on site at 10 a.m. on Friday, September 23, 1988. There were six contractors in attendance. Ed Gensler of Department of State Lands and Gary Rome of Spectrum Engineering were also present.
3. Bid were opened at 2 p.m. on October 6, 1988. The bid tabulation and engineer's estimate are presented in Appendix D at the back of this report.
4. The Notice of Award was issued on October 17, 1988 to the lowest bidder in the amount of \$87,197.50. The Agreement was signed and the Contract was awarded on November 2, 1988 to:

Stevens and Feller Construction
P.O. Box 204
Billings, Montana 59103
Phone: 406/245-0166
MT Contractor's License: 6224 A

5. The pre-construction meeting was held at Spectrum Engineering's office on November 14, 1988. Craig Stevens of Stevens & Feller, Ed Gensler of D.S.L., Gary Rome (project engineer) and Bill Wolff (construction inspector) from Spectrum Engineering were in attendance.
6. The ninety-day contract time started November 14th, 1988 as per the Notice To Proceed. Weather days were requested for November 15 through November 30. This effectively moved the starting date to December 1, 1988.
7. A temporary written winter shut-down was issued on December 23, 1988. Pneumatic stowing at all adits had been finished, the drill holes were nearly finished, and the excavated pit had been backfilled and regraded. Tasks remaining were to regrade near the adits, revegetate the disturbed areas, and finish backfilling the drill holes with concrete. Twenty-three (23) of the ninety (90) construction days were used.
8. Construction resumed at the Wild Horse Project on May 9, 1989 and was finished by May 19.
9. Final inspection took place on May 22, 1989 with Ed Gensler from the AMR Bureau and Gary Rome from Spectrum Engineering.

**WILD HORSE PROJECT
FINAL REPORT**

C. Chronological History (Cont.)

10. The final pay request for the project was sent to the Owner on June 2, 1989.
11. The contractor used thirty-seven (37) of the ninety (90) days allowed for construction.

D. Equipment

1. Flat Allis loader, 745H-B, 1982, 225 horsepower, 5 yd. capacity.
2. Peterbilt tractor, 1969, 335 horsepower.
3. Fontaine lowboy, 1965, 35 ton.
4. Magna generator, KW 350.
5. Case backhoe, 880, 1978, 125 horsepower, 3/4 yd. capacity.
6. Michigan loader, L120, 1986, 175 horsepower, 4 yd. capacity.
7. Holywell stower, 1962, 150 horsepower.

**WILD HORSE PROJECT
FINAL REPORT**

E. Daily Construction Log

Stevens and Feller Construction appointed Craig Stevens to be the Superintendent of the project.

- Nov. 30, 1988 - Met Contractor in Laurel to help move loader to Wild Horse Sites.
- Bearing went out of transport trailer.
- Hank Lowe went on to Lovell and met with Micon Construction.
- Transport arrived at Lovell at 5:00 PM.
- Will move loader into Sites 12/1/88.
- Dec. 1, 1988 - Everybody met at motel and then went to the 4.8 mile Intersection.
- Unloaded equipment there and sent Micon's truck and trailer back to Penn.
- Loader started to haul equipment into site.
- Loader broke down at 4:00 PM.
- Contractor will try and rent one for 12/2/88.
- Dec. 2, 1988 - Contractor said he had loader rented.
- Went to job site and Micon Construction working on pipe on Hopper.
- Contractor showed up at 11:00 AM. Loader rental fell through. Will have loader repaired or rent from Billings by 12/5/88.
- Contractor wants to work 10 hr days.
- Dec. 5, 1988 - Rental loader arrived from Billings.
- Hauled in rest of equipment from 5 mile Intersection.
- Finished pipe and wired generator to stower.
- Need screen on hopper.
- Dec. 6, 1988 - Finished screen on Hopper.
- Started stowing at 9:00 AM.
- Loader fixing haul roads.
- Backhoe filling hopper at Adit #1.
- Loader filled and leveled waste Dump #6.
- Cleaned up debris at Adit #3 and burned it.
- Dec. 7, 1988 - Warmed up equipment.
- Fixed broken pipe.
- Backhoe feeding hopper.
- Loader hauling in sack cement.
- 4 hr. down time because of broken pipe and to repair hopper.

**WILD HORSE PROJECT
FINAL REPORT**

E. Daily Construction Log (Cont.)

- Dec. 8, 1988
- Warmed up generator.
 - Welded screen on hopper.
 - Loader hauling in rest of sack cement.
 - Backhoe loading hopper.
 - Removed debris from Adit #5 and burned it.
 - Removed debris from Adit #2 and burned it.
 - Pickup debris from Adit #3 and burned it.
 - Shorted out 480 U Line on Stowing Machine.
 - Down about 1/2 hour.
- Dec. 9, 1988
- Backhoe filling hopper. Adit #1.
 - Loader removing reject.
 - Loader mixed soil cement.
 - Finished stowing at 12:00 PM.
 - Started mobilization to Adit #5.
- Dec. 10, 1988
- Finished mobilization from Adit #1 to Adit #5.
 - Finished setting up stower and generator.
 - Started stowing at 1:06 PM.
 - Checked distance of stowing at 2:06 PM.
 - Distance ok.
 - Backhoe feeding hopper.
 - Loader removing reject.
 - Welded screen on hopper.
- Dec. 11, 1988
- Warmed up equipment.
 - Backhoe filling hopper.
 - Shut down 9:30 AM to weld screen on hopper.
 - Loader remove reject for fill in Adit #1.
 - Add 4' pipe to stower.
 - Ready for soil cement 12/12/88.
- Dec. 12, 1988
- Warmed up equipment.
 - Mixed up soil cement.
 - Stowed soil cement. Does not work good with stower.
 - Mobilized all equipment to Adit #4.
 - Started stowing to see where it hit in adit.
- Dec. 13, 1988
- Backhoe filling hopper.
 - Loader leveling area off for equipment at Adit #2.
 - Loader stockpiling material for stowing.
 - Site inspection by Ed Gensler and Gary Rome.

**WILD HORSE PROJECT
FINAL REPORT**

E. Daily Construction Log (Cont.)

- Dec. 14, 1988
- Warmed up equipment.
 - Mobilized from Adit #1 to Adit #2.
 - Mixed soil cement up with loader.
 - Stowed soil cement with backhoe and loader.
 - Installed equipment for stowing at Adit #2.
 - Repaired screen on hopper.
- Dec. 15, 1988
- Warmed up generator with tank heater and portable heater.
 - Warmed up backhoe and loader.
 - Finished repairing screen on hopper.
 - Backhoe filling hopper.
 - Loader removing reject at Adit #2.
 - Loader removing reject from Adit #1 to front of Adit #3.
 - Material freeze on side of hopper.
- Dec. 16, 1988
- Warmed up generator.
 - Warmed up backhoe and loader.
 - Heated hopper with new portable torch.
 - Pipe plug up at 1:15 PM.
 - Back stowing at 1:40 PM.
 - Backhoe filling hopper.
 - Loader stockpiling material for stower and regrading hill side.
- Dec. 17, 1988
- Warmed up equipment.
 - Finish stowing Adit #2 at 12:00 PM.
 - Mobilized all equipment to Adit #3.
 - Set up equipment ready to stow.
 - Started stowing to see where material was hitting.
- Dec. 18, 1988
- Started heaters to heat generator.
 - Warmed up equipment.
 - Backhoe filling hopper.
 - Loader stockpiling material. Adit #3.
 - Loader removing reject. Adit #3.
 - Loader leveling at Adit #2.
- Dec. 19, 1988
- Warmed up equipment.
 - Loader stockpiling material at Adit #3.
 - Loader regrading at Adit #2.
 - Stower broke down at 3:21 PM.
 - John Hags went for an electrician.
 - Backhoe and loader finished out day, regrade slopes.
 - BLM Representative showed up and looked over sites. Took some pictures of sites.

**WILD HORSE PROJECT
FINAL REPORT**

E. Daily Construction Log (Cont.)

- Dec. 20, 1988
- Warmed up generator and equipment.
 - Electrician checked out stower unit.
 - AC to DC unit is out. Needs new part.
 - Loader regrading Adit #2.
 - Backhoe regrading Adit #3.
 - Stower ready at 3:30 PM.
 - Stowed until 5:30 PM.
- Dec. 21, 1988
- Heated up all equipment.
 - Loader stockpiling material and removing reject.
 - Backhoe filling hopper.
 - Loader mixed up soil cement.
 - Stowed soil cement with backhoe and loader.
 - Mobilized hopper out to 5 mile Intersection.
- Dec. 22, 1988
- Warmed up loader.
 - Mobilized all equipment out to 5 mile Intersection.
 - Load all Micon Equipment on truck to go to Grand Junction, Colorado.
 - Load Generator, fuel tank and loader on truck to Billings.
 - Filled drill holes with vol plug chips.
 - Shut down for Holidays.
- Winter shutdown.
- May 9, 1989
- Met the operator in Lovell and escorted him to sites.
 - Started servicing the backhoe.
 - Showed the operator what to do at adit #1.
- May 10, 1989
- Finished servicing the backhoe.
 - Loader mobilized to site by 1:00 pm.
 - Started regrading at the Adit #3 site.
- May 11, 1989
- Checked all equipment.
 - Finished grading Adit #3.
 - Finished grading Adit #1.
 - Started regrading Adit #5.
 - Filled the top of the drill holes with concrete.
- May 12, 1989
- Short work day. Hard rain.
- May 15, 1989
- Warmed up all equipment.
 - Finished Adit #5 adit with the backhoe.
 - Loader worked regrading Adit #2.
 - Loader and backhoe worked regrading Adit #4 area.

**WILD HORSE PROJECT
FINAL REPORT**

E. Daily Construction Log (Cont.)

- May 16, 1989
- Started and warmed up all equipment.
 - Finished Adit #4 area regrading.
 - Moved to Adit #2 area and nearly finished regrading there.
 - Excavated a water storage pit to be used by the hydromulch subcontractor.
 - Improved the access road for the water truck.
 - Performed maintenance on equipment.
- May 17, 1989
- Hauled water to the storage reservoir.
 - Finished regrading at the Adit #2 site.
 - Hydromulch truck arrived site at noon.
 - Hydroseeded and hydromulched the Adit #2 site.
- May 18, 1989
- Finished hydroseeding and hydromulching by 11:00 am.
 - Cleaned up the construction area.
 - Started demobilizing equipment.
 - Rebuilt water bars on the access road during retreat.

III. SLIDES

The description of the slides taken to document the work performed at each of the sites is found in Appendix A. In addition, the original slides are found at the very back of one volume and black and white copies of the slides are found in all three volumes directly behind the slide descriptions in Appendix A.

Two prints showing views of the reclamation work are found on the following page.

**WILD HORSE PROJECT
FINAL REPORT**



**Typical Adit Backfilling Using Conventional Machinery
To Feed Pneumatic Injection Equipment**



**Regrading Waste Dumps Following Pneumatic Backfilling
And Preceding Revegetation**

**WILD HORSE PROJECT
FINAL REPORT**

IV. COST SUMMARY

A. Final Payment Request and Reconciliation Change Orders

The following reconciliatory change orders were executed during the course of the project.

Change Order No. 1 - Issued January 11, 1989 with Payment Request No. 2. The amount of pneumatic backfill was increased to be consistent with field measurements. Also, there was a quantity decrease to account for the actual amount of water used at the project site.

Change Order No. 2 - Issued June 1, 1989 with the Final Payment Request (Payment Request No. 3). There was a quantity decrease in the number of acres actually revegetated.

A copy of the Final Payment Request and Change Orders 1 and 2 are contained in Appendix B of this report. These documents summarize the final quantities and costs for each item.

B. Cost Per Site

1. Project Cost Summary

<u>Site</u>	<u>Disturbed Acres</u>	<u>Cost/Acre</u>	<u>Total Project Cost</u>
All	2.94	\$ 28,691.84	\$ 84,354.00
TOTAL	2.94	\$ 28,691.84	\$ 84,354.00

**WILD HORSE PROJECT
FINAL REPORT**

2. Project Cost Breakdown

<u>Item</u>	<u>Quantity</u>	<u>Cost per Unit</u>	<u>Cost per Acre</u>	<u>Total Cost</u>
WILD HORSE (0.00 acres)				
Mobilization	1 L.S.	\$10,000.00	\$ 3,401.36	\$10,000.00
Provide Water	0 KGal	100.00	0.00	0.00
Pneumatic backfill and Seal Adit Openings	2044 C.Yds	23.50	16,338.10	48,034.00
Backfill Boreholes	3 Each	500.00	510.20	1,500.00
Backfill and Regrade Excavated Pit	1 L.S.	8,000.00	2,721.09	8,000.00
Regrade Area	1 L.S.	8,000.00	2,721.09	8,000.00
Fertilize, Seed & Mulch	2.94 Acres	3,000.00	3,000.00	8,820.00
WILD HORSE TOTAL			\$ 28,691.84	\$ 84,354.00

3. Cost Per Yard

Due to the scarcity of topsoil and the remoteness of these sites, no topsoil was moved at the Wild Horse Project. A total of 2,044 cubic yards of material was used to pneumatically backfill five open adits at \$23.50 per yard for a total cost of \$48,034.00. A total of 2,885 cubic yards of earth was regraded at a total lump sum cost of \$16,000.00 or \$5.55 per yard.

V. SUMMARY

A. Completed Reclamation

The Contractor completed the sites involved in this project in the allowable contract time, using 37 calendar days of the 90 days allowed or 41% of the total.

Five adits left open when uranium mining ceased were backfilled using pneumatic backfilling equipment. Some debris in the form of dilapidated posts and headers was disposed of. The 10-foot thickness of material nearest the adit opening was mixed with cement to form a soil cement mixture to ensure permanent closure. Following the backfilling of the underground voids, the mine waste dumps were regraded in place to match the natural contours. After final regrading, all the disturbed areas were revegetated using hydromulching equipment.

WILD HORSE PROJECT FINAL REPORT

B. Comments

Pneumatic backfilling is expensive, but very effective. The material was shot fifty (50) feet back into the openings to ensure complete and permanent closure. However, the openings at these sites were large, usually more than eight (8) feet wide and eight (8) feet high. It may have been acceptable to use a loader or dozer to push backfill into the adits, even though the backfill would not be placed as far in as with pneumatic backfilling.

Hydromulching was employed exclusively due to the presence of wild horses in the area. It was thought that hydromulch would be more difficult to the animals for feed than would crimped hay or straw mulch.

C. Recommendations

Future subsidence is not likely for two reasons. First, the rock over the voids is massive limestone. Second, the pneumatic backfilling method places the closure plug relatively far back into the voids with good compaction. This leads us to believe that failure of the closure is an extremely remote possibility.

Since no topsoil was spread, there is little medium for plants. Furthermore, the revegetation is exposed to hot summer heat and little water. If the fall and winter weather is favorable for the first year, the vegetation may get started. This site should be monitored. It will be interesting to see what our efforts will bear.

APPENDIX A

**SLIDE DESCRIPTIONS
BY PROJECT**

**WILD HORSE PROJECT
FINAL REPORT**

EQUIPMENT

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
1	12/01/88	KW 350 Generator plant.
2	12/01/88	Lowboy and tractor.
3	5/17/89	Dump Truck & 6' Diameter X 12' Tank (2500+ gal)
4	5/17/89	Plastic-Lined Reservoir and Water Truck
5	5/17/89	Loading Hydromulch Truck

DRILL HOLES

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
6	12/01/88	Preconstruction Drill hole #1.
7	12/01/88	Preconstruction Drill Hole #2.
8	12/01/88	Preconstruction Drill Hole #3.
9	12/22/88	Drill Hole Plug (Vol Plug Chips).

WILD HORSE PROJECT
FINAL REPORT

ADIT #1 AREA

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
10	12/01/88	Preconstruction Hole Top of Adit #1.
11	12/01/88	Preconstruction Adit #1.
12	12/01/88	Preconstruction Waste Dump #1.
13	5/10/89	Regrading Adit #1 Area.
14	5/11/89	Regraded Adit #1 Area From Bottom.
15	5/11/89	Regraded Adit #1 Area From East.
16	5/11/89	Regraded Adit #1 Area From Top.
17	5/11/89	Regraded Adit #1 Area From West.
18	5/15/89	Looking Across to Adit #1 Area.
19	5/18/89	Adit #1 Area Hydromulch Completed.

**WILD HORSE PROJECT
FINAL REPORT**

ADIT #2 AREA

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
20	12/01/88	Preconstruction Adit #2.
21	12/01/88	Preconstruction Waste Dump #2.
22	12/08/88	Burning debris at Adit #2.
23	12/15/88	Adit #2 Set up.
24	12/16/88	Loader & Backhoe Working Adit #2.
25	5/15/89	Regrading Adit #2 Area.
26	5/15/89	Regrading Adit #2 Area.
27	5/16/89	Regrading Adit #2 Area.
28	5/17/89	Looking Across to Adit #2 Area.
29	5/18/89	Adit #2 Area Hydromulch Completed.

WILD HORSE PROJECT
FINAL REPORT

ADIT #3 AREA

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
30	12/01/88	Preconstruction Adit #3.
31	12/01/88	Preconstruction Waste Dump #3.
32	12/18/88	Set up at Adit #3.
33	12/18/88	Set up at Adit #3.
34	5/11/89	Regrading Adit #3 Area with Loader.
35	5/11/89	Regrading Adit #3 Area with Backhoe.
36	5/11/89	Regraded Waste Dump #3.
37	5/11/89	Regraded Adit #3 Area.
38	5/11/89	Regraded Adit #3 Area.
39	5/15/89	Looking Across to Adit #3 Area.
40	5/18/89	Adit #3 Area Hydromulch Completed.

**WILD HORSE PROJECT
FINAL REPORT**

ADIT #4 AREA

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
41	12/01/88	Preconstruction Adit #4.
42	12/01/88	Preconstruction Waste Dump #4.
43	12/13/88	Adit #4 set up.
44	12/13/88	Feeding hopper at Adit #4.
45	5/15/89	Regrading Adit #4 Area.
46	5/15/89	Regrading Adit #4 Area.
47	5/16/89	Looking Across to Adit #4 Area.
48	5/18/89	Adit #4 Area Hydromulch Completed.

ADIT #5 AREA

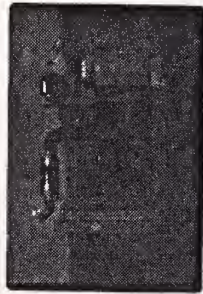
<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
49	12/01/88	Preconstruction Adit #5.
50	12/01/88	Preconstruction Waste Dump #5.
51	12/08/88	Burning debris at Adit #5.
52	12/11/88	Filling hopper at Adit #5.
53	12/11/88	Benching down at Waste Dump #5.
54	5/11/89	Regrading Adit #5 Area.
55	5/11/89	Regrading Adit #5 Area - Equipment on Benches.
56	5/15/89	Regraded Adit #5 Area from West.
57	5/15/89	Regraded Adit #5 Area from Bottom.
58	5/15/89	Looking Across to Adit #5 Area.
59	5/18/89	Adit #5 Area Hydromulch Completed.

WILD HORSE PROJECT
FINAL REPORT

EXCAVATED PIT (DUMP #6) AREA

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
60	12/01/88	Preconstruction Waste Dump #6 from Top.
61	12/01/88	Preconstruction Waste Dump #6 from Bottom.
62	5/18/89	Hydromulching Excavated Pit (Dump #6) Area.
63	5/18/89	Hydromulching Excavated Pit (Dump #6) Area.
64	5/18/89	Excavated Pit (Dump #6) Hydromulch Completed.

KW 350 Generator
PLANT



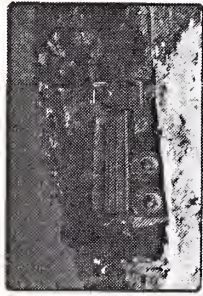
① 12-1-88
WILD HORSE SPECTRUM
83540 9

Logboy & Tractor



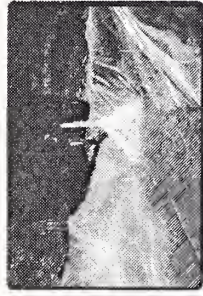
② 12-1-88
Wild Horse Spectrum

Dump Truck & 6x12 Water
Tank (2500+gal)



③ 5-17-89
Wild Horse Spectrum

Plastic-Lined Reservoir
and Water Truck



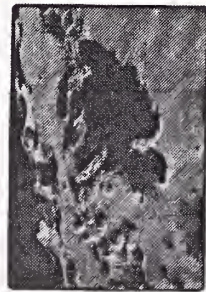
④ 5-17-89
Wild Horse Spectrum

Loading Hydromulch
Truck



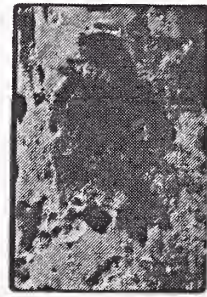
⑤ 5-17-89
Wild Horse Spectrum

Pre Construction
Drill Hole #1



⑥ 12-1-88
Wild Horse Spectrum

Pre Construction
Drill Hole #2



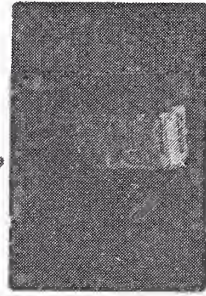
⑦ 12-1-88
Wild Horse Spectrum

Pre Construction
Drill Hole #3



⑧ 12-1-88
Wild Horse Spectrum

Drill Hole Plug
(Vol Plug Chips)



⑨ 12-22-88
Wild Horse Spectrum

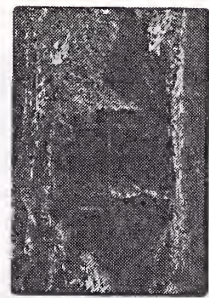
Pre Construction
Hole Top Adit #1



12-1-88

⑩ Wild Horse-Spectrum

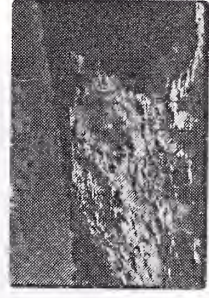
Pre Construction
Adit #1



12-1-88

⑪ Wild Horse-Spectrum

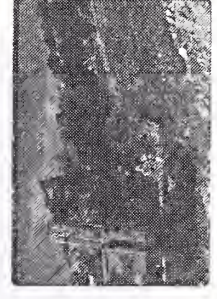
Pre Construction
Waste Dump #1



12-1-88

⑫ Wild Horse-Spectrum

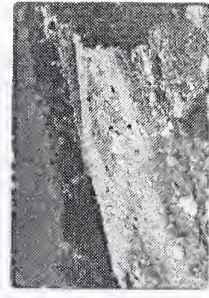
Regrading Adit #1 Area



5-10-89

⑬ Wild Horse-Spectrum

Regraded Adit #1 Area
From Bottom



5-11-89

⑭ Wild Horse-Spectrum

Regraded Adit #1 Area
From East



5-11-89

⑮ Wild Horse-Spectrum

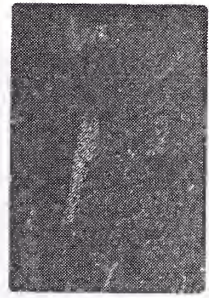
Regraded Adit #1 Area
From Top



5-11-89

⑯ Wild Horse-Spectrum

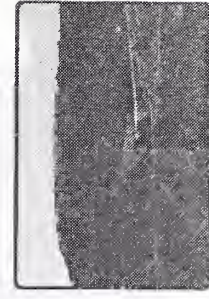
Regraded Adit #1 Area
From West



5-11-89

⑰ Wild Horse-Spectrum

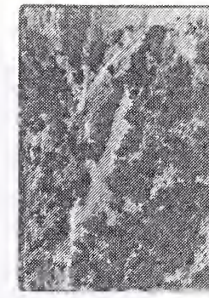
Looking Across to Adit #1
Area



5-15-89

⑱ Wild Horse-Spectrum

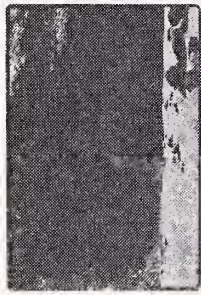
Adit #1 Area Hydraulic
Completed



5-18-89

⑲ Wild Horse-Spectrum

Pre Construction
Adit # 2



12-1-88

(20) Wild Horse Spectrum

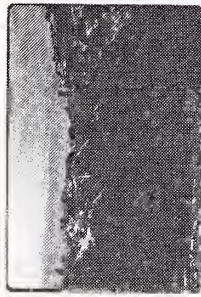
Regrading Adit #2 Area



5-15-89

(25) Wild Horse Spectrum

Pre Construction
Waste Dump #2



12-1-88

(21) Wild Horse Spectrum

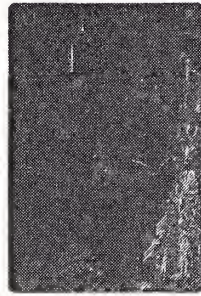
Regrading Adit #2 Area



5-15-89

(26) Wild Horse Spectrum

Burning Debris
at Adit #2



12-8-88

(22) Wild Horse Spectrum

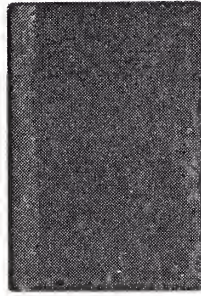
Regrading Adit #2
Area



5-16-89

(27) Wild Horse Spectrum

Adit #2 Set up



12-15-88

(23) Wild Horse Spectrum

Looking Across to Adit #2
Area



5-17-89

(28) Wild Horse Spectrum

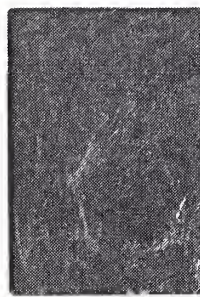
Loader & Backhoe Work
Adit #2



12-16-88

(24) Wild Horse Spectrum

Adit #2 Area Hydraulic
Complete



5-18-89

(29) Wild Horse Spectrum

Pre Construction
Adit #3



12-1-88

(30) Wild Horse Spectrum

Pre construction
Waste Dump #3



12-1-88

(31) Wild Horse Spectrum

Set Up at Adit #3



12-18-88

(32) Wild Horse Spectrum

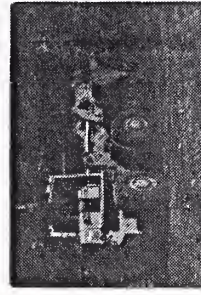
Set Up at Adit #3



12-18-88

(33) Wild Horse Spectrum

Regrading Adit #3 Area
with Loader



5-11-89

(34) Wild Horse Spectrum

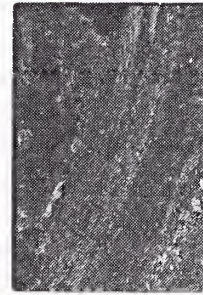
Regrading Adit #3 Area
with Backhoe



5-11-89

(35) Wild Horse Spectrum

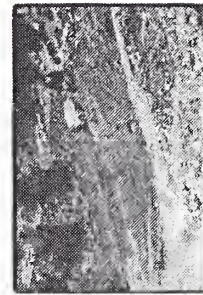
Regraded Adit #3 Area



5-11-89

(37) Wild Horse Spectrum

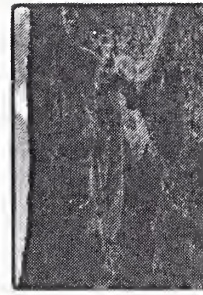
Regraded Adit #3 Area



5-11-89

(38) Wild Horse Spectrum

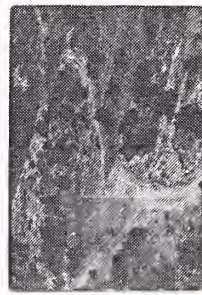
Looking Across to Adit #4
Area



5-15-89

(39) Wild Horse Spectrum

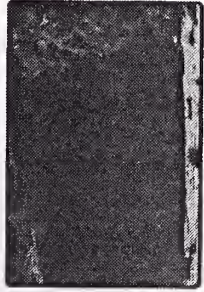
Adit #3 Area Hydromulch
Complete



5-18-89

(40) Wild Horse Spectrum

Pre Construction
Adit # 4



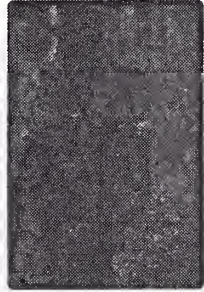
12-1-88
Wild Horse-Spectrum

Pre Construction
Waste Dump # 4



12-1-88
Wild Horse-Spectrum

Adit #4 Setup



12-13-88
Wild Horse-Spectrum

Feeding Hopper
at Adit #4



12-13-88
Wild Horse-Spectrum

Regrading Adit #4 Area



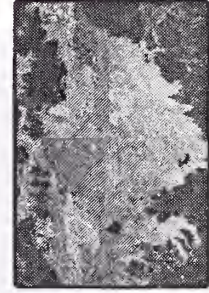
5-15-89
Wild Horse-Spectrum

Regrading Adit #4 Area



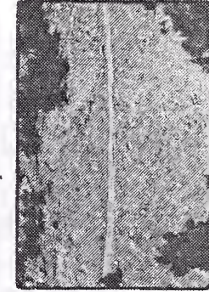
5-15-89
Wild Horse-Spectrum

Looking Across to Adit #4
Area



5-16-89
Wild Horse-Spectrum

Adit #4 Area Hydraulic
Complete



5-18-89
68 AMM

Pre-Construction
Adit #5



④⑨ 12-1-88

Wild Horse-SPECTRUM

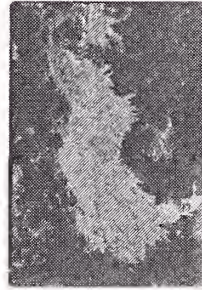
Regrading Adit #5
Area



④⑩ 5-11-89

Wild Horse-SPECTRUM

Adit #5 Area Hydromulch
Complete



④⑪ 5-18-89

Wild-Horse-SPECTRUM

Pre-Construction
Waste Dump #5



④⑩ 12-1-88

Wild Horse-Spectrum

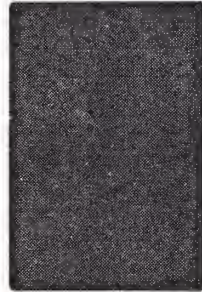
Regrading Adit #5 Area
Equipment piles



④⑪ 5-11-89

Wild Horse-SPECTRUM

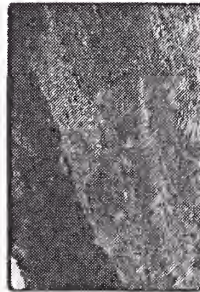
Burn. by Debris
At Adit #5



④⑪ 12-8-88

Wild Horse-Spectrum

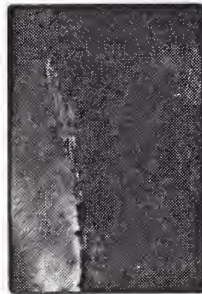
Regraded Adit #5 Area
From West



④⑫ 5-15-89

Wild Horse-SPECTRUM

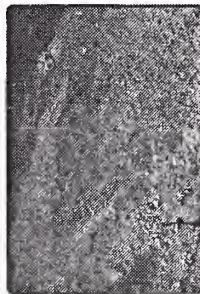
Filling Hopper At
Adit #5



④⑫ 12-11-88

Wild Horse-SPECTRUM

Regraded Adit #5 Area
From Bottom



④⑬ 5-15-89

Wild Horse-SPECTRUM

Benching Down
At Waste Dump #5



④⑬ 12-11-88

Wild Horse-SPECTRUM

Looking Across to Adit #5
Area



④⑭ 5-15-89

Wild Horse-SPECTRUM

Pre-construction
Waste Dump #6
From Top

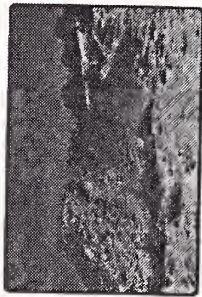


12-1-88

60

Wild Horse - SPECTRUM

Pre-construction
Waste Dump #6
From Bottom

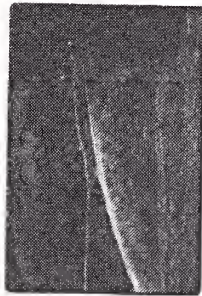


12-1-88

61

Wild Horse - SPECTRUM

Hydro mulching Excavated
Pit (Dump #6) Area



5-18-89

62

Wild Horse - SPECTRUM

Hydro mulching Excavated
Pit (Dump #6) Area



5-18-89

63

Wild Horse - SPECTRUM

Excavated Pit (Dump #6)
Hydro mulch Completed



64

Wild Horse - SPECTRUM

APPENDIX B

FINAL PAY REQUEST

AND

CHANGE ORDERS

SECTION II

2.12 CHANGE ORDER

Order No. 1Date: 1/11/89Agreement Date: 11/02/88NAME OF PROJECT: Wild Horse Project, Carbon CountyOWNER: Montana Department of State Lands, Abandoned Mine Reclamation BureauCONTRACTOR: Stevens & Feller

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show Percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES				TOTAL UNIT COST	TOTAL COST
		MAT'LS.	LABOR	EQUIP.	MISC.		
2	Provide Water Quantity Reconciliation 0 - 48.4 = - 48.4 KGal					\$100.00	(4840.00)
3	Pneumatic Backfill Quantity Reconciliation 2044 - 1945 = 99 C. Yards					23.50	2326.50
TOTAL COST - MAT'LS, LABOR, EQUIPMENT & MISC.						(2513.50)	
OVERHEAD & PROFIT @						0	
GRAND TOTAL - THIS CHANGE ORDER						(2513.50)	

Original Contract Price	<u>\$87,197.50</u>
Current Contract Price Adjusted by Previous Change Order	<u>87,197.50</u>
Cost this Change Order (+ or -)	<u>(2,513.50)</u>
New Contract Price Including this Change Order	<u>\$84,684.00</u>

The completion date as set forth in the Contract Documents shall be (un-
changed, increased, decreased) by 0 calendar days.

The date for completion of all work will be February 28, 1989.

Description and Justification for Change:

1. Quantity reconciliation. Field quantities differed from original bid quantities.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bonds shall apply and extend to the contract as there by modified or amended per this Change Order. The Principal and the surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by _____ (\$ _____) (one hundred (100) percent of the Change Order amount) and the penalty of the applicable Payment Bond or Bonds is hereby increased by _____ (\$ _____) (one hundred (100) percent of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

SURETY

By: _____
(Seal)

Recommended by: *Gary W. [Signature]*, Engineer

Accepted by: _____, Contractor

Approved by: ^{els} *Susan McAnally*, Owner

RECEIVED

JAN 13 1989

STATE LANDS

SECTION II

2.12 CHANGE ORDER

Order No. 2

Date: 6/1/89

Agreement Date: 11/02/88

NAME OF PROJECT: Wild Horse Project

Carbon County, MT Mont. A/E 88-46-119

OWNER: Montana Department of State Lands, Abandoned Mine Reclamation Bureau

CONTRACTOR: Stevens & Feller Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show Percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES				TOTAL UNIT COST	TOTAL COST
		MAT'LS.	LABOR	EQUIP.	MISC.		
7.	Fertilize, Seed and Mulch 2.94 - 3.05 = -0.11 Acres					3000.00	(330.00)
TOTAL COST - MAT'LS, LABOR, EQUIPMENT & MISC.						<u>(330.00)</u>	
OVERHEAD & PROFIT @						<u>N/A</u>	
GRAND TOTAL - THIS CHANGE ORDER						<u>(330.00)</u>	

Original Contract Price \$87,197.50

Current Contract Price Adjusted by Previous Change Order 84,684.00

Cost this Change Order (+ or -) (330.00)

New Contract Price Including this Change Order \$84,354.00

The completion date as set forth in the Contract Documents shall be (un-
changed, increased, decreased) by 0 calendar days.

The date for completion of all work will be June 1, 1989.

Description and Justification for Change:

1. Bid Item 7 - Less Fertilize, Seed, and Mulch was required.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bonds shall apply and extend to the contract as there by modified or amended per this Change Order. The Principal and the surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by _____ (\$ _____) (one hundred (100) percent of the Change Order amount) and the penalty of the applicable Payment Bond or Bonds is hereby increased by _____ (\$ _____) (one hundred (100) percent of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

SURETY

By: _____
(Seal)

Recommended by: Gary A. Rommel, Engineer

Accepted by: _____, Contractor

Approved by: ^{CCJ} Susan McAnally, Owner

Payment Request No. 3
Final Pay Request

From: December 1, 1988
Project Name: Wild Horse Project
Location: Carbon County, Montana
Name of Contractor: Stevens & Feller
Construction, Inc.

To: June 1, 1989
Project No.: Mont A/E 88-46-119
Address: P.O. Box 204
Billings, MT 59103

Summary Of Project Status

Amount of Original Contract	\$	87,197.50
Amount of Approved Change Order(s)		(2,843.50)
TOTAL CONTRACT AMOUNT		84,354.00
Contract Time Used to Date		37 Days
Percentage of Contract Time Used		41 %
Percentage of Contract Amount Earned		100 %

Original Contract Amount Completed	82,027.50
Change Order(s) Amount Completed	2,326.50
Amount for Material On Site	0.00
TOTAL AMOUNT Earned to Date	84,354.00
Less Previous Amount Earned	58,278.38
Amount Payable This Period	26,075.62
Less 1% Gross Receipts Tax	260.76
TOTAL DUE CONTRACTOR THIS PERIOD	25,814.86

Requested By: Stevens and Feller
Construction, Inc.


(Contractor)

Date: 6/1/89

Checked By: Spectrum Engineering


(Engineer)

Date: 6/1/89

^{EEL}
Approved By: Department of State Lands
Abandoned Mine Reclamation Bureau


(Owner)

Date: 6/7/89

PAY REQUEST NO. 3 - FINAL PAY REQUEST
SPECTRUM ENGINEERING

Abandoned Mine Reclamation Bureau

WILD HORSE PROJECT
CARBON COUNTY
MONT A/E 88-46-119

Stevens and Feller
Billings
6224A

Bid Opening: October 6, 19 Page 2 of 2

Item	Est.	Quantity	Unit	Description	Unit Price	Total Price	Units Completed This Request	Units Completed Previous Requests	Total Cost of Completed Work	% of Estimated Quantity Complete	Amount Payable This Request	Amount Payable Previous Requests	Total Amount Payable
1		1	LUMP SUM	MOBILIZATION	XXXXXX \$10,000.00		0.0	1.0	\$10,000.00	100.0%	\$1,280.25	\$8,719.75	\$10,000.00
2	48.4		KGAL	PROVIDE WATER	100.0000	4,840.00	0.0	0.0	0.00	0.0%	0.00	0.00	0.00
3	1,945		C. YARDS	PNEUMATIC BACKFILL AND SEAL ADIT OPENINGS	23.50	45,707.50	0.0	2,044.0	48,034.00	105.1%	0.00	48,034.00	48,034.00
4	3		EACH	BACKFILL BOREHOLES	500.00	1,500.00	3.0	0.0	1,500.00	100.0%	1,500.00	0.00	1,500.00
5	1		LUMP SUM	BACKFILL AND REGRAGE EXCAVATED PIT	XXXXXX 8,000.00		0.0	1.0	8,000.00	100.0%	0.00	8,000.00	8,000.00
6	1		LUMP SUM	REGRADE AREA	XXXXXX 8,000.00		1.0	0.0	8,000.00	100.0%	8,000.00	0.00	8,000.00
7	3.05		ACRES	FERTILIZE, SEED AND MULCH	3000.00	9,150.00	2.94	0.0	8,820.00	96.4%	8,820.00	0.00	8,820.00
TOTALS						\$87,197.50			\$84,354.00		\$19,600.25	\$64,753.75	\$84,354.00

Wild Horse Project
Pay Request Summary

	Request No. 1	Request No. 2	Request No. 3	Totals
Work Done	\$37,752.25	\$27,001.50	\$19,600.25	\$84,354.00
Amount Withheld (10%)	(3,775.22)	(2,700.15)	0.00	(6,475.37)
Previous Amount Withheld	0.00	0.00	6,475.37	6,475.37
Amount Earned	33,977.03	24,301.35	26,075.62	84,354.00
Gross Proceeds (1%)	(339.77)	(243.01)	(260.76)	(843.54)
AMOUNT DUE CONTRACTOR	\$33,637.26	\$24,058.34	\$25,814.86	\$83,510.46

APPENDIX C

**ENGINEERING VERSUS
CONSTRUCTION COST ANALYSIS**

**WILD HORSE PROJECT
FINAL REPORT**

ANALYSIS OF PROFESSIONAL SERVICE FEES
DATE OF PREPARATION: AUGUST 1, 1989

PROFESSIONAL SERVICE	AMOUNT
o Data Gathering, Site Evaluation, Mapping, Preliminary and Final Engineering, Bid Documents	\$ 27,205.13
o Construction Administration, Construction Inspection, Final Report Preparation	\$ 19,400.89
	<hr/>
SPECTRUM ENGINEERING COSTS	<u>\$ 46,606.02</u>
	<hr/>
CONSTRUCTION COSTS	<u>\$ 84,354.00</u>

PERCENTAGE ANALYSIS	PERCENT
DESIGN ENGINEERING COST COMPARED TO CONSTRUCTION COST	32.3 %
CONSTRUCTION ENGINEERING COST COMPARED TO CONSTRUCTION COST	23.0 %
TOTAL ENGINEERING COST COMPARED TO CONSTRUCTION COST	55.3 %

REMARKS: Services provided include lien determination, landowner contact and consent, budget preparation, grant application, weed board approval, basic engineering, construction staking, contract administration, quantity accounting and full time construction/reclamation inspection.

APPENDIX D

**BID TABULATION AND
ENGINEER'S ESTIMATE**

Abandoned Mine Reclamation Bureau

WILD HORSE PROJECT
 CARBON COUNTY
 MONT A/E 88-46-119

ENGINEER'S ESTIMATE
 Spectrum Engineering
 Billings, Montana

Stevens and Feller
 Billings
 6224A

Shumaker Trucking
 6t. Falls
 5199A

Hugh Brindley
 Winnett
 6592A

Donnes Constr.
 Billings
 5996A

Bid Opening: October 6, 1988 Page 1 of 1

Item No.	Est. Quantity	Unit	Description	Spectrum Engineering		Stevens and Feller		Shumaker Trucking		Hugh Brindley		Donnes Constr.	
				Unit Price	Total Price	Unit Price	Total Price	Unit Price	Total Price	Unit Price	Total Price	Unit Price	Total Price
1	1	LUMP SUM	MOBILIZATION	XXXXXXX	\$10,000.00	XXXXXXX	\$10,000.00	XXXXXXX	\$9,500.00	XXXXXXX	\$19,326.00	XXXXXX	\$9,750.00
2	48.4	KGAL	PROVIDE WATER	100.0000	4,840.00	100.0000	4,840.00	70.0000	3,388.00	70.0000	3,388.00	100.0000	4,840.00
3	1,945	C. YARDS	PNEUMATIC BACKFILL AND SEAL ADIT OPENINGS	35.00	68,075.00	23.50	45,707.50	37.32	72,587.40	31.20	60,684.00	45.00	87,525.00
4	3	EACH	BACKFILL BOREHOLES	300.00	900.00	500.00	1,500.00	150.00	450.00	1000.00	3,000.00	1000.00	3,000.00
5	1	LUMP SUM	BACKFILL AND REGRADE EXCAVATED PIT	XXXXXXX	360.00	XXXXXXX	8,000.00	XXXXXXX	4,120.00	XXXXXXX	7,500.00	XXXXXX	500.00
6	1	LUMP SUM	REGRADE AREA	XXXXXXX	8,295.00	XXXXXXX	8,000.00	XXXXXXX	1,391.00	XXXXXXX	7,500.00	XXXXXXX	13,825.00
7	3.05	ACRES	FERTILIZE, SEED AND MULCH	2350.00	7,167.50	3000.00	9,150.00	2451.00	7,475.55	1200.00	3,660.00	2000.00	6,100.00

TOTAL BASE BID

\$99,637.50

\$87,197.50

\$98,911.95

\$105,058.00

\$125,540.00

Abandoned Mine Reclamation Bureau

STATISTICS

WILD HORSE PROJECT
CARBON COUNTY
MONT A/E 88-46-119

ENGINEER'S ESTIMATE
Spectrum Engineering
Billings, Montana

Bid Opening: October 5, 1988 Page 1 of 1

BID RANGE
TOTAL COST

BID RANGE
\$ PER UNIT

Item No.	Est. Quantity	Unit	Description	Unit Price	Total Price	LOW	HIGH	AVERAGE	LOW	HIGH	AVERAGE
1	1	LUMP SUM	MOBILIZATION	XXXXXX	\$10,000.00	\$9,500.00	\$19,326.00	\$12,144.00	\$9,500.00	\$19,326.00	\$12,144.00
2	48.4	KGAL	PROVIDE WATER	100.0000	4,840.00	70.00	100.00	85.00	3,388.00	4,840.00	4,114.00
3	1,945	C. YARDS	PNEUMATIC BACKFILL AND SEAL ADIT OPENINGS	35.00	68,075.00	23.50	45.00	34.26	45,707.50	87,525.00	66,625.98
4	3	EACH	BACKFILL BOREHOLES	300.00	900.00	150.00	1,000.00	662.50	450.00	3,000.00	1,987.50
5	1	LUMP SUM	BACKFILL AND REGRABE EXCAVATED PIT	XXXXXX	360.00	500.00	8,000.00	5,030.00	500.00	8,000.00	5,030.00
6	1	LUMP SUM	REGRABE AREA	XXXXXX	8,295.00	1,391.00	13,825.00	7,679.00	1,391.00	13,825.00	7,679.00
7	3.05	ACRES	FERTILIZE, SEED AND MULCH	2350.00	7,167.50	1,200.00	3,000.00	2,162.75	3,660.00	9,150.00	6,596.39
TOTAL BASE BID					\$99,637.50				\$64,596.50	\$145,666.00	\$104,176.86

